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RAILWAY RATE THEORIES OF THE INTER-
STATE COMMERCE COMMISSION. I.

SUMMARY

An inductive study of rate theories, 1. — Decisions of the Interstate Commerce Commission as material for such a study, 4. — I. Commission's preliminary statement of the fundamental principle of rate making, 7. — The determining factors in the Commission's decisions, 10. — II. Value of commodity as a rate basis, 11. — 1. Competitive commodities, 12. (a) in different stages of manufacture, 13. — (b) as possible substitutes for each other, 25. — 2. Non-competitive commodities, 28. — 3. Market value the criterion, 33. — 4. Social considerations, 35. — III. Cost of service as a rate basis, 40. — 1. Some special service rendered, 42. — 2. Comparison with other commodities, 50. — 3. Comparison with rates elsewhere, 58. — 4. Car load and less than car load shipments, 60. — Conclusion with reference to cost of service, 65.

THE theory of railway rates does not seem to have secured from American economists within recent years that degree of interest which a couple of decades ago was accorded to the subject. This lack of theoretical discussion is the more surprising when one considers that there has been no lack of public interest in railway matters, as is illustrated by the discussions which have taken place both within and without legislative halls. A great mass of literature, scientific

as well as popular, dealing with various phases of the transportation problem has been called forth by this public interest in railways, and yet in all this literature one finds little trace of a serious effort once more to examine and define the principles on which the prices of railway transportation are based.

The probable explanation for this neglect of the theoretical aspects of the transportation problem is to be found in the shifting of interest which has taken place from problems arising out of railway competition to those due to threatened monopoly. A couple of decades ago the fear of railway monopolies was not seriously felt, or at best was only forecasted, not considered as a thing of immediate practical importance. All dangers from that source, it was believed, were effectually forestalled by the legislative prohibition of pooling. Having disposed of the subject in this summary fashion the public turned its attention to that which was felt to be the more urgent problem, — how to prevent discriminations between competing shippers.

Railway managers, finding their efforts to maintain high rates at non-competitive points hampered, if not blocked, and compelled at the same time to continue their struggles with rival roads at competitive points, began to seek a relief from this situation by bringing about a consolidation of the competing roads. The public has accordingly been confronted with the danger of an actual railway monopoly. The question as to whether a given rate is equitable as compared with rates charged on other commodities or with rates charged to competing shippers has given way in large measure to the question as to whether or not an entire schedule of rates is too high. Such theoretical discussion of railway rates as we have had

within recent years has therefore centered around the question as to whether rates can be so adjusted as to yield only a fair return on the value of railway property and as to the best methods of determining that value.

Important as this problem doubtless is, no one would think for a moment that its solution would solve all the difficulties of rate making, or that it would furnish all the principles from which a satisfactory theory of railway rates could be deduced. The importance of a complete theory of railway rates, in harmony with correct economic principles, will never diminish as long as transportation costs continue to form a considerable part in the total costs of producing commodities, and as long as competing shippers and competing localities continue to produce the same commodities for sale in a common market.

The need of ascertaining the economic principles which should govern the actions of those entrusted with the power of rate making has even been emphasized by recent changes in railway laws and proposals for further legislation. A number of the American states have created railway commissions or have strengthened the powers of existing ones, and have placed in their hands the power and responsibility for fixing, in large measure at least, the actual rates for transportation. The Hepburn Act of June 29, 1906, increased the power over rates possessed by the Interstate Commerce Commission and a further increase in its powers has now been made. The fact that the final determination of rates does not rest with the Commission but is left to a special Court of Commerce is probably of little consequence in so far as the final results are concerned. Experience elsewhere shows, as in the case of the English Railway

Commission, and in the case of the courts of arbitration and minimum-wage boards of the Australasian colonies, that wherever special tribunals are created having authority to determine prices and wages, these tribunals, provided only that they are not subject to frequent changes in membership, tend to evolve from their own experiences a set of principles in harmony with existing economic relations and tendencies.

This fact suggests the possibility of evolving a theory of railway rates from a study of the decisions of such railway commissions as have already been in existence. Such a study would be inductive in its methods, in contrast to the deductive methods which have usually been followed by those who have written on this subject. Starting with some general principle of valuation, such as the marginal utility of the service to the shipper, the principle of joint cost, or the tax principle of ability to pay, — various writers have endeavored to show that this given principle was fundamental in the explanation of the theory of railway charges. Without raising here the question as to the validity of the deductive method when applied to the problem of railway rates, or without attempting to discuss any of the principles mentioned above, it may be stated without hesitation that such an inductive study as is here proposed should go far towards confirming or denying the conclusions derived by the deductive method of handling the problem.

The decisions of the Interstate Commerce Commission handed down during the years 1887 to 1906 appear to offer the best opportunity for such an inductive study applicable to American conditions. During those years the Commission was required to report not only its conclusions in each case heard by it but also "the findings of fact" upon which the

conclusions were based. Since the passage of the Hepburn Act the Commission has not been required to report "the findings of fact," except in cases where damages are awarded. Tho this is doubtless sufficient for practical purposes, the absence from the reports of the Commission's "findings of fact" makes the later decisions of less value to the student who seeks to follow the path of reasoning by which the Commissioners were led to their final decision.

In view of the circumstance that in a number of important cases the decisions of the Commission were over-ruled by the courts, when the question considered was not, "is this in accordance with social and economic considerations?" but rather, "Is the decision in accordance with the law and the Constitution?" one may be inclined to question whether, after all, the decisions of the Commission do reflect economic tendencies and principles and thus afford valuable material for a study of rate theories. It may be admitted at the outset that since the Commission was in duty bound to follow the decisions of the courts in subsequent cases of the same sort, the later cases do not afford as good an opportunity as do the earlier ones for obtaining the Commission's unprejudiced views as to the principles involved. These cases are, however, in a minority and even in these cases the Commission usually makes it clear that in reaching its conclusions it is merely following the orders of the court, and is not presenting its own views on the subject. In its reported "findings of fact," the student will usually have no difficulty in discovering the answer which the Commission would have given in the particular case, had it been free to follow its own reasoning to a logical conclusion instead of applying the precedents established by the courts.

In seeking to discover from a study of the decisions of the Interstate Commerce Commission what are the underlying principles in a complete theory of railway rates, it is not intended to imply that the Commissioners are infallible or that their conclusions always reflect sound economic doctrines. On the contrary the decisions are often open to criticism. A division of opinion within the Commission itself is not infrequent, and the strong pressure of conflicting interests occasionally leads to compromises intended to satisfy in a measure all parties concerned. Yet owing to the fact that in the course of two decades numerous cases involving the same principles have come before the Commission for adjudication, and that conclusions reached on the basis of unsound reasoning have failed to give satisfaction and have had to be corrected, it is believed that a study of the cases will throw much light on economic tendencies at work to establish the truth of fundamental principles.¹ Certainly experience is the only safe method for testing our theoretical conclusions, and Mill's dictum that "practice long precedes science" should hold true in this field of inquiry, as in other departments of human affairs.

The members of the Interstate Commerce Commission seem generally to have been appointed without much reference to political considerations and they have usually been men of such intellectual calibre

¹ "The facts presented in this long series of cases are kaleidoscopic. A single fact may appear a hundred times but it always comes again in different company. Never, perhaps, does exactly the same group of facts reappear in exactly the same combination or relationship. Hence each group of facts embraced in a case and each decision based upon the same has an individuality of its own. Generally speaking, no two cases are alike in every respect, and no rule of thumb can be devised by which a decision can be rendered. Yet, the each decision has its peculiar characteristics, an analysis and comparison of many cases and decisions reveals certain common elements or underlying principles and views." — B. H. Meyer, *Railway Legislation in the United States*, p. 195.

as to command the confidence of the public. While the fact that for the most part they have been lawyers has undoubtedly tended to give a legal bias to their conclusions, membership on the Commission has usually lasted long enough to give the Commissioners familiarity with the practical side of railway affairs and with the economic considerations involved. Probably most students of American railway problems would accept Professor B. H. Meyer's statement¹ that the decisions of the Interstate Commerce Commission offer to the public "the most varied, the most widely distributed, the most concrete and the best authenticated collection of facts relating to railways in the United States that is available at the present time." From the conclusions of the Commissioners who have been obliged to study this mass of facts and pass judgment on the questions at issue, it should be possible to obtain some insight into the problem of determining the general principles of rate making.²

I. COMMISSION'S PRELIMINARY DISCUSSION OF RATE THEORIES

The original members of the Interstate Commerce Commission did not approach the work of rate adjudication without a preconceived opinion as to the principles on which railway rates should be based. In their First Annual Report, under the heading

¹ *Railway Legislation in the United States*, p. 196.

² It may not be out of place for the writer to explain the methods by which he has sought to reach the conclusions to be set forth. From a study of the abstracts of the Commission's decisions given in the annual reports he has selected those cases which seemed most likely to offer a discussion of the principles involved in rate making. 135 cases were selected and the full reports of these cases were then studied in detail and thoroughly analyzed with the purpose of ascertaining what in each case was the leading principle involved. The cases were then classified according to these leading principles.

"Classification," the Commissioners discuss the theory of railway charges. *Cost of service* as a basis of rate making they reject, not alone because of the difficulties involved in determining the cost for each commodity separately, but because they believe that such a method of apportionment "would restrict within very narrow limits the commerce in articles whose bulk or weight was large as compared with their value."

Value of service, on the other hand, they accept as the true principle of rate making.

Such method of apportionment would be best for the country because it would enlarge commerce and extend communication; it would be best for the railroads, because it would build up a large business, and it would not be unjust to property owners, who would thus be made to pay in some proportion to benefits received.¹

Just how the value of the service is itself to be measured or even estimated the Commissioners do not undertake to say. In some of the early decisions rendered by the Commission, where the statement is repeated that value and not cost of service constitutes the true principle for determining the reasonableness of a given rate, we do find something approaching to a discussion of this subject. Thus, in one of the Standard Oil cases, we are told that "the effect of transportation upon market value is taken into account by carriers in making rates,"² and this the Commissioners imply is the way to measure the value of the service to the owner of the property carried.

¹ First Annual Report of the Interstate Commerce Commission, pp. 30-32.

² *Rice v. Louisville & Nashville R. R. Co.*, 1 I. C. C. Rep. 503; 1 I. C. R. 722. (There are two editions of the bound volumes of the Interstate Commerce Commission's decisions. One edition contains only the decisions and is always referred to as I. C. C. Rep. The other edition contains Reports and Decisions and is referred to as I. C. R. The set to which I have had access contains some volumes from both editions.)

Again in the case of the *Imperial Coal Co. v. the Pittsburg & L. E. R. R. Co.*¹ the Commissioners declare that "the value of the service to the shipper, in a general sense, is the ability to reach a market and to make his commodity a subject of commerce," and a little further on they say, "In a more definite and accurate sense it consists in reaching a market at a profit, being in effect what the traffic will bear to be remunerative to the producer or dealer."

These statements all seem to imply that the value of the service is measured by the difference in the market value of the commodity at the point of shipment and at the place of unloading. Both theory and experience, however, teach us that this difference is itself determined, in the long run, by the railway rate. Thus, in the report made by the Commission as a result of its investigations of *Alleged Excessive Freight Rates and Charges on Food Products*,² we are told:—

The price of farm products at railway stations is usually the market price in Chicago, St. Louis, New York, or other markets to which shipments from such stations are usually made, less transportation charges and commissions.

The statement that railway rates are fixed in accordance with the value of the service is thus seen to be little more than a truism. In the oil and the coal cases just referred to, as well as elsewhere in the Commission's decisions, the value of the service is considered to have the same meaning as the railway man's expression "what the traffic will bear," and it is not difficult to see that what the traffic will bear, or what the service is worth depends upon whether one views this from the standpoint of the carrier, the shipper, the producer, or the consumer.

¹ 2 I. C. C. Rep. 618; 2 I. C. R. 436.

² 4 I. C. C. Rep. 116; 3 I. C. R. 94.

The term "value of service" may have some importance as an expression of an ideal relationship which should exist between railway rates, but it will not, in many instances at least, serve as a definite standard by which railway rates may be measured and compared.

More assistance in the way of solving our problem will be gained by an analysis of the Commission's decisions. In this way we shall be able to discover what concrete standards the Commissioners have themselves set up for measuring the reasonableness of a given rate when they have been brought face to face with the problems of rate making. For it may be stated at the outset that no single principle has been used by the Commission for solving all the problems of rate making; or, at any rate, if the Commissioners insist on their statement that value of service is the underlying principle in all cases, this expression is used in such a broad sense that it is made to include a variety of considerations any one of which may at times be made the leading factor in the Commission's decisions. Opinions may differ somewhat as to the best way of stating the factors involved. By the present writer they have been classified as follows: (1) the relative values of the commodities transported; (2) the relative costs of transporting the commodities; (3) the relative distances the articles are carried; (4) the relative natural advantages of location possessed by various places; (5) the special and peculiar interests of a given section or of a given class of producers; (6) the importance of maintaining competition; (7) the extent to which a given rate tends to yield a fair return on the actual capital investment.

By one or another of these standards it is believed that in all the cases coming before the Commission its members have (often times unconsciously) sought to

measure the reasonableness of a given rate. It is true that in many cases several of these standards are employed, but a careful study of the case will usually show that some one of the above considerations has been made especially prominent in reaching a conclusion; or, if the case is a very complicated one, that one standard has been applied for testing the reasonableness of the rates in one part of the case and another standard has been used elsewhere. This is practically equivalent to treating the matter as two or more cases, and it will be so treated in the following pages. In those instances where one standard of comparison has been made the primary test of the equitableness of a given rate but there are other considerations of secondary importance, the case has, of course, been treated under the primary heading.

In the following pages we shall consider separately each of the above-mentioned standards of comparison and shall endeavor to show the extent to which the Interstate Commerce Commission has made use of it as a basis for determining the reasonableness of rates. After this review it will be our task to endeavor to harmonize these diverse and sometimes apparently conflicting principles, and to see if their relations to each other cannot be so adjusted as to make it possible to evolve a complete theory of rate making.

II. VALUE OF COMMODITY

In the discussion of rate theories which is found in the First Annual Report¹ and to which reference has already been made, the Commissioners declare that "the value of the article carried [is] the most important element in determining what shall be paid upon

¹ Pp. 30-32.

it." Practically the same position is taken in the Second Annual Report,¹ where it is said that the apportionment of rates according to the value of the service "would seldom be burdensome to articles of high value, but it would relieve cheaper articles from burdens which, if apportioned strictly to the cost to the carriers of their transportation would render carriage for considerable distances out of the question."

The Commissioners are careful to state that the value of the commodity is not the only consideration which enters into value of service. The emphasis which they place upon it, however, as being "the most important element" in determining the value of the service makes it desirable that we should first take up for consideration those cases in which value of commodity is made the standard for measuring the equity of a given rate.

1. *Competitive Commodities*

The first group of cases of this sort consists of those in which the Commission has had to deal with the rates on commodities closely related in character and frequently competitive with each other in the open market. This group may further be divided into two sub-groups. The first sub-group includes articles offered for transportation in different stages of manufacture. In such cases the relative rates charged will often determine the place where the later stages of manufacture shall be carried on. In the second sub-group, the articles do not represent the same commodity but are nevertheless substitutes for each other and the transportation rates might easily determine which commodity should be used.

(a) In the first sub-group the case¹ which first demands consideration has to do with the rates to be charged on "hub-blocks" for use in the manufacture of wheeled vehicles "but upon which only so much labor has been expended as is needful to put them into condition for seasoning." The carrier, made defendant in this proceeding, had been classifying these blocks in the fifth class with unfinished wagon materials. The Commissioners ordered a reduction to sixth class and required that the same rates be applied as were given to lumber. A difference in the values of the commodities is given as a reason for their decision. A car load of hub-blocks was worth only \$280, while a car load of the hubs, turned but not yet mortised, would be worth about \$5000. A case² of the same general character was that which had to do with the relative rates on partially manufactured furniture and on the finished commodities. Complaint was made that the carriers were charging the same rate (30 cents per 100 pounds) on chair materials shipped from Detroit to Omaha as they were charging for the finished chairs. In the case of the materials, the value at Detroit was only \$7 per dozen chairs, while the value of the finished chairs was \$28 per dozen at Detroit, and \$30 at Omaha.

The counsel for the roads raised two points of interest in connection with the claim of the defendant that owing to the lower value of the chair materials lower rates should be given than on the finished chairs. (1) Owing to the fact that a car load of chair materials weighed from 25,000 to 30,000 pounds while a car load of finished chairs weighed only 7,000 pounds, it

¹ *F. L. Hurlburt v. L. S. & M. S. R'y Co.*; 2 I. C. C. Rep. 122; 2 I. C. R. 81.

² *Murphy, Wasey & Co. v. Wabash R. R. Co. et al.*, 5 I. C. C. Rep. 122; 3 I. C. R. 725.

was said that the value of a car load of materials was about the same as that of a car load of the finished articles, and this he argued warranted charging the same rate *per 100 pounds* on the two shipments. (2) It was said that the proper basis for making rates was the "increased value of such car loads after their arrival at Omaha."¹

The Commission held: (1)² "that the proper basis would seem to be their value at Detroit when shipped"; (2) that while the carriers were justified in making such charges as would yield "a greater compensation in the aggregate for hauling a large than a small car load, as a general rule the rate per 100 pounds should be less in the former than in the latter case." The Commission, therefore, left the rates on the finished commodities at 30 cents per 100 pounds and fixed the rate on wooden materials at not more than 20 cents per 100 pounds.

Precisely the same situation was revealed in another case³ in which the Commission expressed the opinion that unfinished bed-room sets should be given a rate of 85 per cent of that granted to the finished articles, because of "the difference in value of the unfinished and finished furniture . . . and the greater tonnage per car load which can be hauled of the former." In both of these cases it will be noted that cost of service as well as value of commodity is cited as a reason for the difference in the rates.

The same principles applied in the above cases also find expression in several other cases where the ques-

¹ This seems to be a logical application of the Commission's theory that value of service is measured by the "effect of transportation on market value."

² For the purpose of clearly distinguishing the various points in the Commissioners' arguments I have numbered them in this case as in many succeeding cases.

³ *Potter Mfg. Co. v. Chi. & Grand Trunk R'y Co. et al.*, 5 I. C. C. Rep. 514; 4 I. C. R. 223.

tion is raised as to what shall be the relation of rates on raw or semi-finished materials as compared to those on the finished commodities. Thus the Commission refused ¹ to give its approval to the practice of certain carriers in classifying hatters' furs and fur scraps and cuttings as double first-class with correspondingly high rates, while at the same time hats, the finished product, were placed in the first class of the Official classification. Here again other considerations, such as competition and cost of service, enter into the decision; but value of commodity is apparently the consideration chiefly held in mind. The Commissioners say:—

We should be inclined to say that fur scrap and cuttings must be rated higher than second class were it not for the claim of the defendants that this would lead to fraud in the billing of fur and fur scraps. . . . Hatters' fur, the raw material, does compete in a way with hats, the finished product, and we do not think that, under the circumstances of this case, the rate upon the raw material ought to be greater than upon the finished product.

On the same grounds the Commission refused ² to allow leather scraps to be classed with sole leather and to be given the same rates, when the complainant in the case had proved that the value of the leather scraps was only from 2 to 5 cents per pound while sole leather was valued at from 25 to 45 cents per pound. Even in this case the Commission adds a cost of service argument to its decision in stating that "liability to damage in case of scrap is practically nothing."

The Commission also decided ³ that, altho carriers were not obliged to adopt such a classification as

¹ *Myer v. C. C. C. & St. L. R'y Co. et al.*, 9 I. C. C. Rep. 78.

² *Newman v. N. Y. C. & H. R. Co. et al.*, 11 I. C. C. Rep. 517.

³ *National Machinery & Wrecking Company v. P. C. & St. L. R'y Co. et al.*, 11 I. C. C. Rep. 581.

would provide one rate on new dynamos and another on second-hand ones, in case the second-hand dynamo was bought for the purpose of being converted into junk and had actually no other value, carriers were bound to apply rates offered on scrap iron. "Its value is no greater than the selling price by the pound of the metal which it contains, not indeed as great since a certain amount of labor must be expended before even that price can be obtained." Here again the logic of the value of commodity argument is somewhat disturbed by the statement that a dynamo, as such, can properly be charged a high rate because it requires great care in handling.

What appears at first as a perversion of the underlying principle of the above cases, viz. that raw materials should take a lower rate than the commodities made therefrom, is illustrated in a decision¹ of the Commission that window shades could not lawfully be charged a higher rate than the material from which they were made. The decision was, however, true to the value of commodity principle, for the evidence clearly showed that the material (window hollands) was pound for pound more valuable than the finished commodity. "The items of similar bulk and weight, less value and risk of carriage, and important volume of traffic, are all in the direction of giving window shades a classification as low as that which is provided for window hollands." The carriers had been classifying manufactured window shades in class one and window hollands in class three of the Official Classification. The Commission ordered them both into class three. The U. S. Circuit Court refused to enforce this order of the Commission on the ground that it "applied to shades having very high value as

¹ Page et al. v. D. L. & W. R. R., 6 I. C. C. Rep. 148; 49 I. C. R. 525.

well as to the cheaper varieties." Accordingly the Commission on a re-hearing of the case¹ issued a new order which permitted the carriers "to restrict their transportation of window shades at third-class rates to those limited to a specified maximum valuation at the time of shipment." The effect of the court's ruling was, therefore, to strengthen rather than to weaken the value of commodity principle.

A case² similar to the above was that in which the Commission decided that a rate on box shooks higher than that on lumber was not justifiable, since investigation showed that a car load of lumber weighed about 36,000 pounds and was worth from \$350 to \$800, while a car load of box shooks weighed about 30,000 pounds and was worth only \$220.

Several cases coming before the Commission have had to do with the relative rates on the principal cereals and their products. In most of these cases the Commission has based its decisions mainly on a consideration of the competitive conditions surrounding the shipping and marketing of grain and its products, but to a slight extent it has made the difference in value between the grain and its products a reason for allowing higher rates on the latter. The Commission's whole attitude on the question is well expressed in its treatment of the matter of a differential between corn and corn meal shipped from Missouri river points to Louisiana.³ Its statement is as follows:—

The Commission has, as a rule, approved a reasonable difference between any raw material and the manufactured article, but when the amount of labor, and increased value, and extra risk, were so comparatively insignificant as upon grain whole and grain ground,

¹ 6 I. C. C. Rep. 548.

² Michigan Box Co. v. F. & P. M. R. R. Co. et al., 6 I. C. C. Rep. 335.

³ 11 I. C. C. Rep. 227.

it has not found that any very great extra freight charge was warranted by the needs of the carrier, as a protection to any industry or just to the consumer, and wherever the carrier has seen fit to waive its privilege of a slightly advanced rate for the carriage of its product, and the rate on the raw material was reasonably low, the Commission has not interfered with that discretion.

A differential of 3 cents per 100 pounds above the freight charges on corn was allowed in the transportation of corn meal from the Missouri river to points in Texas,¹ and a differential of 5 cents was allowed to the Pacific coast.² In these cases, as in most of the others which we have considered, the carriers' cost of service arguments based on the greater risk involved and the greater expense of handling the manufactured product were given some degree of recognition by the Commission, tho less emphasis was placed upon these considerations than upon the difference in the values of the commodities.

Milk and cream may for all practical purposes be regarded as the same article in different stages of manufacture and the Commission has recognized the difference in their values as a sufficient justification for charging 45 cents per can for transporting cream while only 35 cents were charged for carrying milk.³ At the same time the reasoning employed by the Commissioners in reality resolves itself into a cost of service argument.

The element of value in the commodity transported forms a proper consideration to be taken into account in the establishment of a rate. The liability of the carriers as an insurer of freight against all loss except such as is occasioned by the act of God or of the public enemy, is elementary, and the greater the value the greater the risk.

¹ 11 I. C. C. Rep. 220.

² 11 I. C. C. Rep. 212.

³ *N. W. Howell et al. v. N. Y., L. E. & W. R. R. Co. et al.*, 2 I. C. C. Rep. 272; 2 I. C. R. 162.

Two cases which bring out very clearly the influence which value of commodity should have, in the opinion of the Commissioners, in determining the reasonableness of railway charges have to do with the relative rates on live stock and packing-house products. At the same time these cases illustrate the limits fixed by competition to the application of this principle.

In the first case, a complaint instituted by the Chicago Board of Trade,¹ the defendants, a number of carriers in the Middle West, were in the habit of giving lower rates on packing-house products from Sioux City, Iowa, and other western packing centers to Chicago than they gave to live hogs when shipped to the same market. They defended their practice on the grounds of (1) higher cost of service in the case of live hogs; (2) larger traffic in packing-house products and the materials used in these houses, such as salt, ice, etc., which furnished return cargoes in part; and (3) the necessity of protecting vested interests, since large investments had been made in the western packing industry, based on the expectation that lower rates were to be given its products.

None of these reasons was found by the Commission to be borne out by the evidence submitted or to be sufficiently important to warrant the discrimination in rates. On the contrary, the Commissioners declared:—

As articles of commerce, the evidence shows without conflict, that the live hog and its products are in direct competition with each other. This only brings out in a stronger light the discrimination that is made against the traffic in the live hog as compared with the traffic in the product. Of the two the product is very much more valuable; it is transported at more expense to the carrier.

¹ Chicago Board of Trade v. C. & A. R. R. et al., 4 I. C. C. Rep. 153; 3 I. C. R. 233.

The evidence submitted tended to show that the value per 100 pounds of live hog was from about \$4.50 to \$4.75, while an equal weight of the packing-house product was worth about \$7.50.

In view of the very great difference in the values of the two commodities, we might naturally expect that much lower rates on the live animals than on the products would be ordered by the Commission. But owing to the keen competition existing between the Chicago packers and those of the western cities, the Commission did not feel warranted in going so far. They contented themselves with a notice to the carriers that the "rates made by them on live hogs should not be greater than upon packing-house products."

In the second case of this sort with which the Commission was called upon to deal, practically the same complaint was made, the complainant being the Chicago Live Stock Exchange.¹ Some new conditions in this case, however, demand our consideration.

During the years intervening between the earlier Chicago Board of Trade decision and the hearing of this case several of the carriers which were defendants in the former case had extended their lines westward beyond the Missouri river. Other lines, like the Chicago & Great Western Railway, extended only to that river. The roads extending beyond the river were inclined to establish such rates as would favor the traffic in live stock, since in this way shipments to Chicago would be entirely over their own lines. The roads terminating at the river were, on the other hand, inclined to establish such rates as favored the traffic in live-stock products; since if the animals were unloaded and slaughtered at the Missouri river towns,

¹ Chicago Live Stock Exchange v. C. & G. W. R'y Co. et al., 10 I. C. C. Rep. 423.

these lines would share in the shipment of the products to Chicago and the East. The real cause of the discrimination was, therefore, competition between the lines extending beyond the Missouri river and those terminating at the river.

The testimony offered before the Commission showed that the giving of lower rates on live-stock products than on the live animals was due to the action of the Chicago & Great Western Railway whose lines terminated at the Missouri river. The competition of this line had forced the other roads, so it was claimed, to depart from the order issued by the Commission in the Board of Trade case. The defense offered by the Chicago & Great Western was lower cost of service in the case of the live-stock products. The evidence, however, showed that the real purpose of the discrimination was to secure for this carrier a larger share of the traffic in the products of live stock than it could otherwise hope to obtain.

The Commission found little evidence tending to support the claim of the Chicago & Great Western that the cost of service was higher for the live animals than for their products. The officials of nearly all the other roads represented in the investigation expressed the opinion that the rates on live stock should not be higher than those on animal products, while some of the officials claimed that the live-stock rates should be lower than for the meat products. The Commissioners themselves said: "Altho we think cost of transportation is a very important element, we do not consider it a controlling element in this case." They ordered the carriers to give such rates on live stock as should not *exceed* those on the live-stock products. Their decision rested on the value of commodity principle, expressed as follows:—

In determining what the relation should be between the rates charged for transporting two different freight articles, value is often an important factor, but this is not alone because of the greater risk connected with the transportation of the more valuable article. Improvements made during recent years in the road-beds and equipment of carriers have rendered the item of risk in many cases of little consequence. The value of the article is important, principally, because of its bearing upon the value to the shipper of the transportation service; and the value of the service is, and has always been considered by carriers, one of the important elements to be considered when fixing the rates to be charged for transportation. As stated in the findings of fact, live-stock products, compared with the live animals, are about twice as valuable.

As in the Board of Trade case, so here also, the Commission was not able to follow this argument to its logical conclusion by requiring lower rates on live animals than on packing-house products. The nature of the competition between these two classes of commodities was such that equal rates seemed to be required. In describing this competition, the Commissioners made it evident that the emphasis which they placed on the relative values of the commodities was due to the fact that these values were believed to reflect the competitive relationship which existed between them. They said: —

Another very important factor is the relation existing between the articles transported. If the relation is remote, such as that between flour and silk, a change of a few cents per hundred pounds in the rates charged for transporting one of them may not affect traffic in the other; but if the relation is close, such as that between raw material on the one hand and goods manufactured from that material on the other, a slight change in the adjustment of transportation charges between the two articles may be sufficient to close manufacturing plants at some points and increase the output of plants elsewhere. And it is because of this difference that some discriminations made by the carriers are justifiable under certain circumstances.

One of the cases most difficult to solve which has come before the Commission is that of the *Grain*

*Shippers' Association of Northwest Iowa v. the Illinois Central Railroad Company et al.*¹ The case presents too many elements to enable us to consider them all under a single heading, but value of commodity plays such an important part in the discussion that the case demands our attention here.

The rates complained of were those on corn, wheat, and other grains from Sioux City and other points in northwestern Iowa to Chicago and to points on the east bank of the Mississippi river. The complainants urged that the rates on these grains were too high to enable them to be raised and marketed with a profit. It was said that the rates were disproportionately high as compared to those on other commodities having a higher value and whose costs of transportation were higher. Particular emphasis in this connection was placed on the relatively low rates given on hogs and cattle, and it was said that the adjustment of rates was such that it favored the farmers who fed their grain and shipped the live stock and thus discriminated against the small farmers and tenants who could not afford to buy stock for feeding. When the case is looked at in this light it will be seen that it involves the question as to what shall be the rates on raw material (grain) as compared to those on its manufactured products (hogs and cattle).

The answer of the defendants to the complaint that rates on grain were excessive as compared to those on other commodities was that this complaint might have some justification if rates were made under "ideal conditions," but that under the "actual conditions" with which the carriers had to deal, where competition was the "controlling consideration," such rates as were asked for by the complainants

¹ 8 I. C. C. Rep. 153.

were impossible. In this connection the Commissioners inquired of the traffic managers present "upon what basis a freight rate was made, what elements entered into it," and their questions seem to have been particularly directed towards finding out what part the value of the commodity played in determining the rate charged for its transportation. The answers of the traffic managers, as condensed and set forth by the Commissioners, were as follows:—

In ideal traffic conditions certain elements would be taken into account in establishing a freight rate. These, among others, would be value of the commodity, the cost of service, the volume of traffic, etc. Under these conditions the witnesses rather thought that value might be a pretty important factor in determining the freight rate. Under actual conditions, while an attempt was made to regard these various considerations, as a rule, the controlling influence was competition. The witnesses expressed the opinion that the rates on grain would be, if such ideal conditions could obtain, too low¹ in proportion to the rates on manufactured articles, but it was said that such ideal conditions did not and could not obtain. . . . In a word, the freight tariff was made as it was, not because it ought to be that, but because it must be that. The railways obtained all they could, which was still too little. The witnesses all said that the grain rates in question were entirely the result of competition.

The Commissioners were inclined to agree with the traffic managers in their statement that the rates in question were established as a result of competition, but they were not willing to admit that the carriers were justified in neglecting the other elements which should be considered in the fixing of freight rates. This was particularly true of the value of the commodity. The Commissioners say:—

Value is undoubtedly an element which should be considered in the fixing of rates. It is often a most important element but

¹ The reference here seems to be to rates on grain from Minneapolis and Kansas City to Chicago, which the testimony showed were much lower than from northwest Iowa, owing to excessive competition at those points.

plainly cannot be made an arbitrary standard independent of all other considerations. This case certainly shows that in the opinion of these traffic men produced as witnesses, the present tariffs do not represent an ideal relation in rates between different commodities, and perhaps fairly shows that if such ideal relations could be obtained the rates on grains are too high as compared with those on some other commodities, especially manufactured articles.

It was, however, the relation between the rates on grain and those on live stock which seemed to the Commissioners especially unfair.

Whether the grain shall be shipped to market or fed in the vicinity of where it is raised depends, in a measure, upon the freight rate upon the grain and upon the live stock. For this reason there ought to be, to some extent, a correspondence between the rates upon these commodities, and a decrease in the rate upon one ought ordinarily to be accompanied by a decrease in the other.

An investigation of the changes in rates between 1887 and 1898, when the case was heard, showed, however, that the decline in the rate on live stock had been much greater than in that on grain. "We are of the opinion, too," say the Commissioners, "that the rate on live stock at the present time is lower in proportion to the service rendered than that on grain."

Without making any formal order in the case, the Commissioners recommended a considerable lowering of the rates on grain from Sioux City and surrounding territory to Chicago. In reaching this conclusion the members of the Commission were undoubtedly influenced mainly by the showing made by the complainants as to the relative rates on grain and live stock when compared with the relation between their market values.

(b) Coming now to the second sub-group of cases, dealing with commodities which are competitive in

character, we shall notice, first, a case which had to do with the relative rates on Pearline and common soap.¹

The carrier had undertaken to place Pearline in class four of the Southern classification and to charge a rate of 73 cents per one hundred pounds between New York and Atlanta. Common soap was placed in class six, which under ordinary conditions would have given it a rate of 49 cents to Atlanta. Owing, however, to the existence of water competition between New York and Atlanta, common soap had received a special rate to Atlanta of 33 cents per 100 pounds.

The presentation of the arguments in the case brought out the following points: (1) Pearline was an article in general use and was used for the same purpose as was common soap, with which article it was in direct competition. (2) The market value of Pearline was about twice that of the common soap. (3) The risks involved in its carriage were somewhat greater than for the soap. (4) Water competition at Savannah made necessary a lower rate on soap to Atlanta than to other points, but Pearline, owing to risks from dampness, could not be shipped by water, hence no special rate was given it to Atlanta.

The Commission held that the discrimination against Pearline was too great, that it should be placed in the fifth class and be given a rate of 60 cents per 100 pounds. Common soap was to remain in the sixth class and pay the full rates of that class, except to Atlanta, where the competition of a through rail and water route made the special rate of 33 cents per 100 pounds necessary.

In explaining the reason for allowing a difference in the rates on the two commodities, the Commissioners say:—

¹ *James Pyle & Sons v. East Tenn., Va. & Ga. R. R. Co.*, 1 I. C. C. Rep. 465.

The very great difference in the value and also the risk in case of serious accident in the transportation of Pearline as compared with common soap would seem to indicate that there is ground for a reasonable difference in the freight rates on these two articles.

The decision seems to rest chiefly on the difference in the values of the two commodities, tho it should be noticed that two other considerations furnish a partial explanation, viz. the risks (*i. e.* the cost) of transportation and, in the case of the special Atlanta rate, the existence of water competition.

Value of commodity is again the controlling, tho not the exclusive, consideration in the case of *Coxe Bros. v. The Lehigh Valley R. R. Co.*¹ The complainants had asked that the same classification and rates be given to anthracite coal that were given to the bituminous product.

The Commissioners declined to make this concession on the grounds that (1) the value of the anthracite coal was greater and therefore the service of transporting it was worth more to the shipper; (2) the shorter distance from the mines to the principal markets in the case of anthracite rendered its transportation per ton-mile more expensive. This latter argument, it will be noticed, is based on cost of service.

The Commission, however, ordered that some reduction be made in the rates on anthracite, since rates on coal are generally less than on such commodities as iron ore and pig iron, whose value is greater, while the Lehigh road had in force higher rates on coal than on these commodities. The evidence showed, too, that this road had but recently raised the rates on coal, after having for two years maintained lower rates on the anthracite coal than on these iron products. The long maintenance of the lower rates

¹ 4 I. C. C. Rep. 535; 3 I. C. R. 460.

on coal satisfied the Commissioners that their rates were profitable to the carrier.

Another coal case which falls within this group is that of *McGrew v. Missouri Pacific R'y Co.*¹ The Commission decided that the carrier might properly make a distinction in classification between soft and lump coal, used only for domestic purposes, and "mine-run, nut, mill and slack" coal used only for steam purposes, and might give a lower rate to the latter class. Such a distinction clearly rests for a justification on differences in the values of the two commodities.

In the case of *Wolf Bros. v. Alleghany R'y Co. et al.*² it was decided that since paper bags were made of cheaper paper, were packed in a different way, and were used for a different purpose than were merchandise envelopes, there was no objection to giving these bags a lower classification and lower rates than were accorded to the merchandise envelopes, even tho the complainant called these envelopes paper bags and was able to show that the cost of service in transporting them was less than for the ordinary envelopes.

Still another concession to value of commodity over cost of service appears in one of the Standard Oil Cases.³ The carrier was ordered to charge only on the basis of the weight of the oil carried in barrels when it charged for oil only, if carried in tanks, and not to charge barrel shipments on the gross weight.

2. Non-Competitive Commodities

The second class of decisions in which the value of the commodity is selected as the controlling consideration in the determination of the railway rate has to do with articles which, tho not of the same kind and

¹ 8 I. C. C. Rep. 630.

² 7 I. C. C. Rep. 40.

³ *Rice, Robinson & Winthrop v. Western N. Y. & Penn. R. R. Co.*, 4 I. C. C. Rep. 131; 3 I. C. R. 162.

not directly competitive, are nevertheless so similar in character as to warrant similar treatment.

In the first case¹ of this sort the Commissioners refused permission to the defendant carrier to classify railroad ties in class five (manufactured wooden commodities) while at the same time it classified lumber and other unfinished wooden articles in class six, and in addition gave a special low rate to lumber. The defendant claimed as a reason for placing ties in a higher class than lumber that "tie shipments are less in quantity and require switching for single cars, whereas in the case of lumber, we switch a large number of cars together." The Commission rejected this cost of service argument, not because it was based on cost of service and was therefore incorrect in principle but because the statement was "not convincing."

No special reason appears in the evidence why tie shipments are not likely to be as large per day as lumber shipments, therefore the distinction cannot be sustained on the ground of greater cost of movement, for no such greater cost is established.

The Commissioners maintained that lumber and ties were so alike in character and the conditions for transporting them were so similar that they should be classed alike and that such discrimination as was shown by the defendant was not justified by the relative values of the two commodities.

In another case² the Commissioners held that it was unjust and unreasonable to put raisins in a higher class, taking a higher rate, than was given to dried fruits, since the market value of the raisins was uniformly lower than that of California dried fruits.

¹ *Reynolds v. Western N. Y. & Penn. R'y Co. et al.*, 1 I. C. C. Rep. 393; 1 I. C. R. 686.

² *Martin v. Southern Pacific Co. et al.*, 2 I. C. C. Rep. 1; 2 I. C. R. 1.

The same conclusion was reached with reference to the classification of celery.¹ The carriers were ordered to give it the same classification and rates as were given to cauliflower, asparagus, lettuce, whether shipped in car load or less than car load lots. It was said that since the original classification was made, celery had come into much more common use.

Its production has greatly increased and its market value has declined. It certainly is no more a table luxury than some of the vegetables which have a lower class in the Western classification.

A rather curious attempt to adjust rates in mathematical proportion to the values of the commodities is furnished by a case² coming before the Commission where the question was as to the relative rates on cabbages and potatoes. The Commissioners said:—

As the weight of a barrel of cabbage is three-fourths of that of a barrel of potatoes and its price or value only one-half (two fourths) it would seem that there is a difference of one-fourth in favor of cabbage. This is upon the assumption that bulk and value would operate equally in proportion to amount in enhancing rates. Our conclusion is that the rate on cabbage from Charleston should be one-fourth less than the rate on potatoes.

It should be said, however, that this reasoning was only incidental to a general discussion which dealt with more important matters, and it would be a mistake to lay much emphasis upon it as an expression of the views of the Commissioners.

In order to determine the importance which should be attached to the value of a commodity in fixing the rate which is to be paid upon it, the Commissioners have at times taken into consideration the uses to

¹ *Tecumseh Celery Co. v. Clin. Jackson & Mackinaw. R'y Co. et al.*, 5 I. C. C. Rep. 663; 4 I. C. R. 318.

² *Truck Farmers' Association of Charleston and Vicinity v. Northeastern R. R. Co. of South Carolina et al.*, 6 I. C. C. Rep. 295.

which a given commodity is to be put. In one case¹ the question was raised as to whether cow peas were to be classed with such commodities as corn and oats, or whether they should go into a class with commercial fertilizers and take the same rates as the latter commodity. The complainants urged that cow peas were used for fertilizing purposes, but the defendants held that they were also used extensively as a feed for cattle and even to some extent as an edible. The Commissioners found the facts to be as stated by the defendants. As a fertilizer it was shown that the cow peas were not only more valuable than other fertilizers, but were capable of fertilizing pound per pound more land than cotton-seed meal and other fertilizers: —

The planter can afford to pay a higher rate on cow peas used in the process of enriching his land than he can afford to pay upon commercial fertilizers; while on the other hand, the carriers would derive inadequate revenue from the carriage of this product if the peas should be treated as complainant insists they should be. There are other facts, however, which still further distinguish cow peas from fertilizers in general use. The vine is used as fodder in stock feeding quite extensively throughout the Southern States, and the pea itself is consumed by many as an edible, and its use as food is quite general. Again, the value of cow peas per hundred pounds is greatly in excess of that of the general fertilizer, a fact which should be considered in fixing rates.

Another case² which illustrates the same point, — that the use to which a commodity is to be put must be considered in determining the rate to be paid upon it, — is that in which the Commissioners decided that "the Scheidel outfit," an electrical apparatus mainly employed in the production of the X-ray, should be classified with medical and scientific instruments and pay double first-class rates in the Official

¹ A. G. Swafford v. Atlantic Coast Line R. R. Co. et al., 10 I. C. C. Rep. 281.

² W. Scheidel & Co. v. Chi. & Northwestern R'y Co. et al., 11 I. C. C. Rep. 532.

classification, rather than be classified with "electrical appliances not otherwise specified" which were charged single first-class rates only. The Commissioners said, however, that if later there should develop a considerable demand for a similar mechanism for commercial uses, then all such mechanic appliances, including the Scheidel outfit, might be entitled to a lower rating.

The case, however, which best illustrates the principle applicable throughout this entire group is that of *Rice v. Cincinnati, Washington & Baltimore Railroad Co. et al.*¹ It shows that the importance which the Commission is willing to attach to the value of a commodity as a measure of the reasonableness of a railway rate is less in the case of commodities non-character than in the case of those which are in direct competitive in competition with each other.

Complaint was made that the rate on refined petroleum oil was unreasonable as compared to that given on cotton-seed oil, which, tho transported in much the same way and having a higher market value, was nevertheless given a lower rate. The Commission declined to adjust the rates on these two commodities on the basis of their relative values, holding that inasmuch as they were not competitive commodities the discriminating rate given to one could not "appreciably affect the market price of the other," and therefore could not unjustly affect the shipper. The two products were so dissimilar in character and supplied such different demands that a low rate on one could not be of any disadvantage to the shippers of the other.

The Commissioners were willing to admit, however, that since the methods of transporting the two com-

¹ 5 I. C. C. Rep. 193; 3 I. C. R. 841.

modities were much the same, the rate given on one commodity might have "some bearing" on the reasonableness of the rate on the other, especially when their relative values were taken into consideration, and it was seen that the higher priced commodity was receiving the lower rate.

In respect to the methods and cost of transportation, these commodities (cotton-seed oil and turpentine) have a notable resemblance to petroleum products, and the cheapest of them is several times more valuable than illuminating oil. . . . Notwithstanding the comparatively low value of refined petroleum, the amount exacted for its transportation is in some instances 60% greater than the sum accepted for carrying cotton-seed oil between the same stations. It is impossible to reconcile such inconsistent charges. The cotton-seed oil rate, in the cases referred to, is not forced upon the railroad, and must, therefore, be presumed to be remunerative; but if the lower rate for the higher priced article is reasonable to the carrier, how can the higher rate for the lower priced article be reasonable to the shipper?"

Other cases which have come before the Commission might be cited to show how the principle of value of commodity has been made use of to determine the rate on non-competitive articles, but other considerations enter into these cases and their discussion would not aid in the presentation of the argument.

3. *Market Value the Criterion*

The third class of cases in which the value of the commodity transported is accepted as a test of the reasonableness of the railway rate is not a large one nor in itself of great importance. Its importance lies rather in the fact that these cases show that, in judging of the values of the commodities in question, the Commissioners have in mind the market values rather than the intrinsic utilities of the articles.

A manufacturer of patent medicines made objections¹ to the Official Classification employed on eastern railway lines, according to which patent medicines were placed in first class when shipped in less than car load lots and in third class when shipped in car load lots; whereas beer, ale, etc., when shipped in less than car load quantities, were given a third class rating, and in car load lots were placed in fifth class. The complainant asserted that not only were the modes of packing, the methods of handling, and the risks of transportation the same for the patent medicines as for the beer, ale, etc., but that the "intrinsic value" of the patent medicines was no greater than that of the beer, etc. The higher market value of the patent medicines it was said was simply "the result of skill in advertising." The Commissioners, however, declared that:—

The value of an article to the manufacturer is the price it commands and it seems only reasonable that carriers should take into account the market value, a thing generally known and easily ascertained, as one of the considerations in arranging their classifications and fixing the rates that a commodity should bear. It is not seen how the relations that any specific commodity should bear to other commodities for classification purposes can be arrived at in any other practicable way.

Since the evidence in this case showed that a car load of the patent medicines in question had a market value of \$5400, while a car load of beer or ale sold for about \$1800 the Commission decided that the existing differences in classification and rates were justified.

The same attitude was observed in the case of the *Andrews Soap Company v. Pittsburg, Cincinnati & St. Louis Railway Co. et al.*,² where the complainant had

¹ *Warner v. N. Y. C. and H. R. R. Co. et al.*, 4 I. C. C. Rep. 32; 3 I. C. R. 74.

² 4 I. C. C. Rep. 41; 3 I. C. R. 77.

urged that his soap, tho advertised as a toilet soap, was in reality of the same character and utility as laundry soap and therefore entitled to the lower rates given to laundry soap. The Commissioners said: —

A manufacturer's description of an article to induce its purchase by the public also describes it for transportation and carriers may accept his description for purposes of classification and rates.

4. Social Considerations

We come finally to a fourth class of cases in which the value of the commodity is accepted as a criterion of the reasonableness of the rates. Here social considerations are cited by the Commissioners as reasons why commodities having a high value should be called upon to pay higher rates than commodities having a low value. Such an idea finds frequent expression in the Commission's decisions, as for example when it is said in discussing the rate on hay:¹ "When the market price of a commodity yields but scant return for labor and expenses of production, the cost of transportation needs to be as moderate as may be consistent with justice to the carriers." The same position with reference to the hay rate was taken in the case of *The National Hay Association v. The Lake Shore & Michigan Southern Railway Company et al.*²

A more explicit enunciation of this doctrine is, however, found in the discussion of the rates on iron and steel products.³ Low rates on these commodities said the Commission are

¹ *Behlmer v. Memphis & Charleston R. R. Co. et al.*, 6 I. C. C. Rep. 257; 4 I. C. R. 870.

² 9 I. C. C. Rep. 204.

³ *Colorado Fuel & Iron Company v. The Southern Pacific Company et al.*, 6 I. C. C. Rep. 438.

largely due to the character of such commodities, the use to which they are put, the demand for them in large quantities throughout the country, their susceptibility of movement at less cost and risk to the carrier than high class and more valuable freight, and other like conditions. It is to the interest of the carriers as well as the public, that their rates be low enough, if not below a remunerative point, to permit the general movement and distribution of these commodities in general demand in larger quantities for construction, building, manufacturing, and other purposes. Reasonable freedom of such movement and distribution stimulates the growth and development of the country and thereby promotes all interests. . . . Rates on steel rails and other low grade freights of the character stated, yielding per ton per mile the average received on all freight would be unjust.

A further indication of the importance which the Commissioners attached to the market values of these commodities in fixing the rates to be paid upon them is shown by the fact that it was later decided¹ that in cases where the carriers had reduced the rates on iron and steel because of a reduction of the prices of such articles due to commercial depression, they were justified in advancing the rates when the commercial depression was past. The Commissioners were careful to repudiate the idea that freight rates in general might be adjusted on the principle of the sliding scale, but they found something akin to this system in the traffic in iron and steel and did not care to disturb it.

Iron rates seem to be peculiarly susceptible to these commercial influences. The charge for transporting pig iron from southern producers to northern points of consumption has for a long time varied directly with the value of the article transported.

Social considerations have seemed to the members of the Commission to require that the rates on the lower priced grains, corn and oats, should be lower than those on wheat,² and that a considerable reduc-

¹ In the Matter of Proposed Advances in Freight Rates, 9 I. C. C. Rep. 382.

² 4 I. C. C. Rep. 48; 3 I. C. R. 93.

tion in the price of wheat should be followed by a reduction in the rates on that commodity charged by the carrier.¹ Generally speaking, the Commission seems committed to the principle that where the market price of a commodity is low and it is an article in general demand, the interests of the public require that the carrier should be satisfied with small profits from the transportation of this commodity.

The equitable rule doubtless is that rates should bear a fair and reasonable relation to the antecedent average cost of the traffic as delivered to the carrier for transportation and the average market price the freight will command, or, as it is termed, the commercial value of the property.²

It might be thought that the principle of value of commodity could never be applied in connection with the passenger traffic. It is true that in most countries, and to a limited extent also in the United States, the passenger coaches are divided into compartments, having different accommodations and different rates. By so doing it is expected that people of little means may nevertheless travel on the railroads if they are content to accept accommodations inferior to those furnished to the first class passengers. There is no compulsion, however, on the part of millionaires to travel first class and to pay the high rates, if they prefer to take advantage of the low rates offered to those who travel in the second or third class compartments.

In one case,³ however, the Interstate Commerce Commission has upheld certain railroads in their practice of putting immigrants into a special class

¹ 6 I. C. C. Rep. 520.

² *Delaware State Grange v. N. Y., Ph^a & Norfolk R. R. Co. et al.*, 4 I. C. C. Rep. 588; 3 I. C. R. 554.

³ *Savery v. N. Y. C. and H. R. R. Co. et al.*, 2 I. C. C. Rep. 338.

and giving them lower rates than were accorded either to first or second class passengers, and in their refusal to sell tickets to other persons at the same rates as were given to immigrants even tho these other persons were willing to ride in the immigrant cars.

The reason given by the Commission for sustaining the carriers in this case was that immigrants are

a class of persons readily distinguishable from the general public, and so far constituting a special class that up to that time when they are received upon the cars they are subject to exceptional regulations for reasons, which being accepted as a basis of legislation, must be deemed sufficient.

Altho the Commissioners do not here set forth value of commodity as a reason for granting lower rates to immigrants than to other persons, it seems difficult to justify this discrimination on other grounds. The cost of service would not be less in the case of immigrants than for other persons travelling in immigrant cars. The fact that immigrants constitute "a legally recognized class of persons subject to exceptional regulations" would not of itself justify lower rates than for native-born Americans any more than it would justify higher rates. It is, however, logical to consider immigrants as constituting a class of persons possessing little means, having therefore little ability to pay and thus subject to a lower rate than that given to other passengers. Broad social and governmental considerations therefore serve to justify the lower rates given to these persons of little financial ability.

This review of the more important cases in which the Interstate Commerce Commission has based its decision in large part on considerations involving the value of the commodities, serves to show that while

value of commodity has undoubtedly at times been accepted as a test of the reasonableness of a given rate, the use made of the principle has been much less than one would naturally suppose, in view of the strong assertion by the commission that "the value of the article carried [constitutes] the most important element in determining what shall be paid upon it." There is little, indeed, in the experience of the Interstate Commerce Commission to warrant Professor E. R. Johnson's expectation that as governmental regulation proceeds, rates will more and more be fixed "with reference to the values of the commodities."¹ In those cases in which the Commissioners have referred to the principle of value of the commodity as influential in determining the rate they have never insisted that charges should be *proportional* to the values of the commodities.

In many of the cases decided by the Commission the value of the commodity has been referred to because it indicated in some degree the risk assumed by the carrier. In the most important group of cases which we have considered, the Commission has felt obliged to take into consideration the differences in the values of finished and unfinished goods in order to preserve competition in their production. In still other cases the desire to preserve competition among carriers has led to the consideration of the relative values of the competing commodities. In only a relatively small number of cases has the Commission felt that social and economic considerations were so urgent as to require that commodities entering largely into general consumption and having a low value

¹ Johnson, *American Railway Transportation*, p. 281. Cf. "The Principles of Governmental Regulation of Railways." *Political Science Quarterly*, vol. xv, pp. 45-47.

should be given the benefit of low rates; and even in these cases the argument might be advanced that it was the general demand for the commodities rather than their low values which led the Commissioners to prescribe the low rates.

III. COST OF SERVICE

The proposition that in the business of railway transportation, with its large proportion of fixed to circulating capital, it is impracticable to determine the costs of performing any particular service or of transporting any particular commodity, has been so often demonstrated that we need give it no further consideration. If the theory of cost of service is to be employed in explaining the principle of railway charges, the term costs must, undoubtedly, be used in the sense of joint costs.¹

We have already observed that the original members of the Interstate Commerce Commission held that the cost of service principle was not applicable to railway charges. Their attitude in this matter is well set forth in the following quotation from their decision in one of the earliest cases² which came before them:—

While cost, as has been said, is an element to be taken into account in the fixing of rates and one of the very highest importance, it cannot, for reasons well understood, be made the rate basis, but it must in any case be used with caution and reserve. This is not merely because the word "cost" is made use of in different senses when applied to railroad traffic, it being often used to cover merely the expense of loading, moving, and unloading trains, but also because in whatever sense the word may be used, it is quite im-

¹ Professor Taussig has stated fully this theory of joint cost in its application to railway rates in the *Quarterly Journal of Economics*, vol. v, pp. 438-465. Reprinted in part in Ripley's "Railway Problems," pp. 123-144.

² In re petition of Louisville & Nashville Railroad Company, 1 I. C. C. Rep. 31; 1 I. C. R. 278.

possible to apportion with accuracy the cost of service among the items of the traffic. . . . Any attempt to apportion the cost, therefore, would at the best and under the most favorable circumstances only reach an approximation. This is so well understood the world over that the proposition which from time to time is made in other countries to measure the charge of the carrier by the cost of the carriage solely, have always been abandoned after investigation.

It is well known that traffic managers and others engaged in the business of transportation flatly deny that the cost of service principle can be used as a means of fixing railway rates.¹

In view of this strong agreement between railway officials and the members of the Interstate Commerce Commission as to the impossibility and undesirability of using cost of service as a measure of the reasonableness of a railway rate, it is somewhat surprising to find that in defending rates which have been made the subject of complaint to the Commission, railway officials and railway attorneys have frequently — perhaps most frequently — done so by the use of cost of service arguments. Even more surprising, however, is the fact that the Commissioners have not only lent a willing ear to such arguments and sustained them whenever the evidence seemed to support them, but they have very frequently on their own initiative entered into an investigation of the cost of transportation with a view to rendering a decision on the basis of the facts ascertained by this investigation. The members of the Commission have, of course, never pretended that they could ascertain the exact proportion of the fixed and operating expenses assignable to a given commodity. Such has not been the purpose of their investigations, nor the tenor of the decisions. The attempt has not been made to

¹ Cf. Kirkman, *Railway Rates and Government Control*, pp. 73-75.

apportion the charges, as the Commissioners say, "strictly to the cost." But cost of service has nevertheless been used as a means of determining the reasonableness of rates in four different classes of cases. (1) When a rate higher than the ordinary could be justified on the ground that some special service had been performed or a special obligation incurred by the carrier. (2) Where a rate complained of was judged as to its reasonableness by comparing the ascertainable costs of transportation with those incurred in transporting other commodities whose rates were believed to be reasonable. (3) Where comparison was made with costs on other roads or on other parts of the system. (4) Where the costs of shipping commodities in car load lots were compared with those incurred in shipping less than car load quantities. By methods of comparison, therefore, rather than by attempting to ascertain the exact and total costs of transporting a given commodity, the Interstate Commerce Commission has made use of the cost of service principle as applied to railway rates. We shall take up for consideration each of the four classes of cases in turn.

1. Costs of Rendering Some Special Service

Under this heading, the first case with which we have to deal is that of *John P. Squire & Co. v. The Michigan Central Railroad Co. et al.*¹ This case should be compared with the Chicago Board of Trade and the Chicago Live Stock Exchange cases which we have already considered and in which, it will be remembered, the Commissioners made value of commodity the controlling principle. In the present case,

¹ 4 I. C. C. Rep. 611; 3 I. C. R. 515.

however, much greater emphasis was placed upon the cost of service.

The complainant in the case was engaged in the business of slaughtering hogs in the vicinity of Boston. For some time, the railroads had granted him a rate of 30 cents per 100 lbs. on live hogs transported from Chicago to Boston. The rate on dressed beef and hog products had been fixed by the Trunk Line Association, after an exhaustive hearing, at 65 cents per 100 lbs. With this adjustment of rates the complainant had been satisfied. Railway competition, however, soon set in, and while the rates on live hogs remained the same as before, those on hog products fell lower and lower, being at times as low as 17 cents per 100 lbs. With this relation of rates existing between the live hogs and their products, the business of the complainant was being ruined, since it was brought out in the hearing of the case that virtually the only difference in the cost of slaughtering hogs in the East and West was the cost of transporting the live animals.

The complainant asked that the rates be based on purely "commercial considerations," wholly independent of the cost of the service. He argued that the railroads should justly make relative rates such that both parties could live, and that the product rate should be higher than the live-hog rate, even if the cost of transporting the two articles were the same, which he claimed was not the case.

The argument resting on the relative values of the two commodities should have exerted an influence, it seems, on the minds of the Commissioners, since value of commodity had been accepted as the controlling principle in the earlier cases which dealt with the same commodities. In the present case the Com-

missioners did not accept this line of reasoning. They admitted that the increased value of the product might legitimately be taken into account in the fixing of the rate, but they declared that to base rates upon the theory advanced by the complainant would mean that the rates on live hogs would have to vary with every change in the market price of the animals in the western markets.

The Commission therefore proceeded to make a lengthy investigation into the relative costs of transporting the two kinds of commodities and reached the following conclusions: —

(1) The product is carried in more expensive cars. . . . The interest on the increased original cost and the greater outlay for repairs are constant expenses. (2) The weight of the refrigerator car, when loaded with the product, including the ice for refrigeration, is about 64,000 pounds, and that of the live-stock car when loaded is 46,000 pounds. If the tariff was based solely upon tonnage, that is, upon the weight of the car and its load when the carrier charges 30 cents per hundred for carrying the live hogs, the charge for carrying the product should be about 42 cents per hundred. (3) The loading and unloading of the animals by the shipper instead of the carrier is a continuing advantage. (4) The rapidity with which the cars used in the live-stock traffic are loaded render them less liable to detention, and they are returned to the traffic sooner than when loaded with the product. (5) The refrigerator cars have to be iced. Five tons of ice and salt per car are furnished in the Chicago-Boston business. This is a constant expense in summer months. (6) The product is more valuable than the live animals.

All of these considerations except the last, it will be noted, have to do with the extra costs incurred by the carriers in transporting the meat products. The costs, it is true, are not accurately determined. Indeed there is much that seems arbitrary in the Commissioners' methods of computing the extra costs due to the methods of handling the meat traffic, by which they arrive at the conclusion that the rates

in force at the time of the hearing of the case, viz. 30 cents per hundred pounds for live animals and 45 cents per hundred for the products, furnish an equitable adjustment of the dispute. The Commissioners of the Trunk Lines had previously given the question of the relative rates for these commodities much thought and had concluded that when the live-hog rate was 30 cents per 100 pounds, the rate on the hog products should be 65 cents. We are interested at present not in the merits of the decision but in the theory by which the Commissioners reached their conclusion; and concerning this their explicit statement leaves us no way in doubt.

We are of the opinion that in the fixing of relative rates upon articles strictly competitive, as these are, the proper relation should be determined from the cost of the service, and if the difference in this respect between two competitive articles can be ascertained, such a rate should be fixed for each as corresponds to the cost of service. This is fair to the carrier and we believe that the manufacturer has a right to demand of the companies that such a relation of rates as to these articles should be maintained.

In the investigation made by the Commission in 1902-1903 into *The Matter of Proposed Advances in Freight Rates*,¹ an inquiry was made into the reasons for a recent advance in the rates on dressed beef from 40 cents to 45 cents per 100 pounds. The carriers claimed that the 45 cent rate was not an advance but a restoration of a rate which excessive competition had made it impossible to maintain in the past. Competitive conditions had now so changed that it was believed that the old rates could be maintained. The Commissioners after investigation concluded that the explanation given by the carriers was satisfactory and that the 45 cent rate was reasonable, —

¹ 9 I. C. C. Rep. 382.

especially in view of the fact that while the rate is high the service is expensive to the carriers. The loading of these cars is of special construction, and heavier than the ordinary car; refrigeration must be provided, which necessitates the hauling of large quantities of ice and salt, an express service is demanded and the car must be returned empty.

The same line of argument was employed in the case of the *Truck Farmers' Association of Charleston and Vicinity v. Northeastern Railroad Co. of South Carolina et al.*¹ The complainants claimed that 6½ cents a quart was exorbitant for transporting strawberries from Charleston, S. C. to Baltimore, Philadelphia, and New York, and that an undue disparity existed between the rates on strawberries and those on potatoes and cabbages shipped in bulk. The carriers defended the rates on berries in view of the unusual costs incurred in their transportation, which they described at length. They claimed, furthermore, that the rates were properly enough made higher on berries than on the potatoes and cabbage because the berries were worth more per pound.

The Commissioners attached little weight to this value of commodity argument made by the defendants, and in their decision placed the emphasis on the high costs of the service. They went carefully over the evidence submitted by the carriers and undertook to calculate the necessary costs of getting the berries into the New York market in good condition. They concluded that the charge of two cents per quart for icing was too high by about one half cent per quart, but otherwise they appeared satisfied with the showing made by the carriers as to the cost of service. They announced, therefore, that a rate of six cents per quart for transporting berries from Charleston to

¹ 6 I. C. C. Rep. 295.

New York was not excessive, and this decision they defended in the following manner: —

The rate per ton-mile under the charge above prescribed of six cents per quart will be very much higher than that demanded by carriers on ordinary freight. Relatively higher rates on strawberries, however, appear to be justified by the exceptional character of the service connected with their transportation. This exceptional service is necessitated by the highly perishable character of the traffic, requiring refrigeration *en route*, rapid transit, specially provided trains, and prompt delivery at destination. There is also involved in this service extra trouble in handling at receiving and delivering points, extra facilities at such points, the "drilling" of cars in a train, reduction of length of trains to secure celerity of movement, partially loaded cars, the return of cars empty, and perhaps other similar incidentals.

In a case¹ analagous to the above the Commission decided that 81 cents per 100 pounds was a reasonable rate for transporting peaches in car load lots from Atlanta to New York. The same considerations creating an expensive cost of service were present in this case as in the one just treated. "In view of these considerations," said the Commissioners, "we cannot say that the established rate is so excessive as to call for condemnation." An interesting feature of this case was the refusal of the Commission to allow the carriers to increase their charges in a progressive rate whenever the value of the car load exceeded \$500. The carriers sought to justify the increase on the ground that the danger of damage to freight was greater in the case of the heavier car loads and that there was no other means of covering these risks, since no charge was made for the excess over the prescribed minimum weights for car loads. It is evident that the higher rates could have been upheld on the value of commodity principle, and the

¹ Georgia Peach Growers' Association v. The Atlantic Coast Line R. R. Co. et al. 10 I. C. C. Rep. 255.

failure of the Commission to recognize this fact shows how far its members had departed from their former view that "the value of the article carried [is] the most important element in determining what shall be paid upon it."

In spite of the refusal of the Commissioners to recognize unusual liability to damage as a reason for charging higher rates in the above case, this has not always been the attitude of that body. In the case of the *New Orleans Live Stock Exchange v. Texas & Pacific Railway Company*,¹ the peculiar argument was advanced by the defendant that certain high rates on cattle shipments, which were the subject of complaint, were due to the fact that the carrier was frequently obliged to pay excessive damages awarded to Texas shippers by the Texas courts. The Commissioners were unwilling to admit that "a judgment rendered in the course of judicial procedure is unjust or excessive," but they did recognize that the character of the live-stock traffic was such that large sums for damages might have to be paid by carriers engaged in this traffic, and that this was, "an incident in the transportation of that commodity which may properly be taken into account by the railroad in establishing its tariffs." The higher rates in this given instance were not allowed, however, for the reason that the testimony seemed to show that the large claims for damages were due to the carriers' own negligence; and the Commission held that shippers of cattle ought not to be called upon to pay higher charges for transportation "to make good the negligence of the carrier itself."

Higher rates on lumber shipped from Dalton, Georgia, to points on the Ohio river than were charged

¹ 10 I. C. C. Rep. 327.

from other places near Dalton were upheld by the Commission ¹ because of differences in the cost of service which resulted from "dressing-in-transit" privileges accorded Dalton but not the other places.

The Commissioners said: —

The dressing of the lumber results in a comparatively important waste of raw material, which is by that amount loss of tonnage to the carrier, a duplication of terminal expense, a loss of time and increase of expenses by reasons of delays in the through shipment to destination.

The decision of the Commission in the case of the *Commercial Club of Omaha v. The Chicago & Northwestern Railway Co. et al.*² that the carriers were privileged to charge higher rates on goods sent from Omaha, Nebraska, to points within the State of Iowa than were charged to the same points from Council Bluffs, Iowa (across the Missouri river from Omaha), rested in the main upon the opinion of the majority of the Commissioners that Council Bluffs was entitled to its natural advantages of location for carrying on a trade with Iowa cities. In part, however, the majority of the Commissioners made use of the cost of service argument as a defense of their decision; and cost of service was the sole basis of the argument employed by Commissioner Prouty, who supported the majority in its decision but not in its principal arguments. Even the dissenting Commissioners admitted that the decision of the majority might properly be upheld upon the basis of cost of service arguments were it not for the fact that to all other points than those in Iowa the carriers had established equal rates from those two cities.

¹ J. K. Farrar et al v. Southern R'y Co, et al., 11 I. C. C. Rep. 632.

² I. C. C. Rep. 386.

The cost of service argument rested upon the fact that, in carrying goods from Omaha to Iowa points, the railroads were obliged to make use of an expensive bridge across the Missouri river and to pay the tolls for the use of this bridge exacted by its owners. Messrs. Knapp and Yeomans said, for the majority:—

These shipments to Iowa towns require a greater service from the carriers than is performed for Council Bluffs merchants for they are hauled a greater distance and over an expensive bridge. The charge for this extra service is admitted to be reasonable and those for whom it is performed cannot justly complain because it is not gratuitously rendered. . . . The defendants which constructed the bridge over this river, and the defendants which have leased the right to run their trains across it are *prima facie* entitled to some compensation for their outlay.

Enough cases have been cited to show that the members of the Interstate Commerce Commission have reached the very reasonable conclusion that where the conditions of the traffic are such as to require some special service on the part of the carriers, involving unusual expenditures, the carriers are justified in demanding higher rates to cover these extra costs, and that to this extent at least the cost of service principle is applicable in the case of railway rates.

2. Comparison with other Commodities

In this class of cases the Commission has sought to make a study of the comparative costs of transporting different commodities, oftentimes with a view to determining their classification. But since in the Commission's own words, "classification is the foundation of all rate making," it follows that if the classification has been based on costs, these costs inevitably determine the rates to be charged for their transportation.

Possibly the best illustration of this class of cases is the effort made by the Commission to determine the relative rates on oranges and strawberries,¹ shipped from Florida to the New York market. In an earlier case the Commission had decided that a reasonable rate on oranges was \$120 per car. On the basis of this decision the complainants asked for a reduction of the rates on strawberries which, at the time of the hearing of the case, averaged \$361.80 per car.

The Commissioners proceeded to ascertain, what, if any, were the considerations which would justify different rates on strawberries than on oranges and how great these differences should be. As stated by the Commissioners these differences are as follows. It will be noted that all but one of them have to do with cost of service.

(1) The expense of handling berries at junction or terminal points, berries not being handled with trucks, as are oranges. (2) Allowances for hauling the berry cars on the passenger trains on the line of the F. C. & P. railroad. (3) Extra dead weight of refrigerator cars when loaded with berries instead of oranges, owing to the fact that an average berry load is only half an orange load. (4) Extra risk of loss in case of accident arising from negligence of carrier. (5) Less value of the oranges. (6) Less volume of the berry traffic. (7) Only one half the weight of the average car load of oranges makes an average car load of berries. (8) Oranges can go by water or ordinary trains. Berries must go by fast trains. (9) Oranges do not require refrigeration, but refrigeration is indispensable in the berry traffic.

On the basis of these considerations the Commission ordered a reduction in the rates on berries so that they should pay only double first-class rates plus 30 cents a crate. This would make the rate on an average car load \$299.70.

¹ *C. P. Perry v. The Fla. Cent. & Pen. R. R. Co. et al.*, 5 I. C. C. Rep. 97; 3 I. C. R. 740.

In a similar manner the Commissioners discuss the relative rates on beans and tomatoes.¹ The defendant carrier had placed beans in the second class of the Southern Classification and tomatoes in the third class, altho in weight and value the two commodities were much the same. This classification resulted in a rate of 70 cents per 100 pounds on beans shipped from Verona, Miss. to East St. Louis, Ill., while tomatoes were charged only 44 cents for the same distance. The Commission did not order a change in rates or classification, but in the following words declared that the existing rates were unwarranted: "The present difference of almost one half in the rate on beans and tomatoes, when the actual cost of transportation is nearly the same, ought to be remedied."

In several cases which have come before the Commission having to do with the relative rates on corn and corn products, that body has, as we have seen, allowed slightly higher rates on the corn than on its products, mainly owing to the higher value of the latter commodities. In several other instances, however, the differences in the rates on these commodities have been adjusted on the basis of the comparative costs of transportation.

In the case of *H. Bates and H. Bates, Jr. v. The Pennsylvania Railroad Company et al.*,² complaint was made by a firm of Indianapolis millers that owing to a change in classification the carriers were charging a rate of 23 cents per 100 pounds for transporting corn meal from Indianapolis to Chicago, while a rate of only 18½ cents per 100 pounds was charged for raw corn. This relation of rates was said to be proving ruinous to the Indianapolis milling industry. The

¹ *W. R. Rea v. The Mobile and Ohio R. R. Co.*, 7 I. C. C. Rep. 43.

² 3 I. C. C. Rep. 435; 2 I. C. R. 715.

carriers based their defense mainly on the competitive conditions surrounding the traffic, particularly competition by the Great Lakes which affected the rate on corn but not that on corn products.

The Commission did not believe that water competition was very effective in the case of corn sent from Indianapolis, owing to the distance of that city from the Great Lakes. It declared that "no reason founded on cost of service exists for a difference in rates between corn and corn products," and tho it was admitted that the manufactured product was commercially a little more valuable than the corn, other advantages existed in the transportation of the product, so that "on the whole the transportation of each at the same rate was equally valuable to the carrier." The carriers were therefore ordered to cease discriminating between corn and corn products.

The carriers succeeded in obtaining a rehearing of the case,¹ and having discovered that the Commission was inclined to place more weight on differences in the cost of transporting the two commodities than on differences in the commercial values, the defense prepared its brief on the basis of a cost of service argument. Evidence was submitted to show that a difference in the rates on corn and corn products was justified by higher loading and terminal expenses for the corn products than for the corn. It was shown that the difference in the rates which at the time of the former hearing was 4½ cents per 100 pounds had now been reduced to 2½ cents. The rates on corn could not be raised, it was said, because if this were done, it would shut the farmers of the Indianapolis region out of the eastern market, since the rates would then be higher than those from the North and West,

¹ 4 I. C. C. Rep. 281; 3 I. C. R. 390.

where water competition compelled low rates. On the other hand, if the rate on corn products was made as low as that on corn, "the carrier would receive less than a justifiable charge without substantial advantage to the farmers."

On the basis of this showing the Commission decided to vacate its former order which required equal rates on the two commodities. The reasons for this reversal of its decision were stated as follows:—

(1) We think the additional testimony has established the fact that the cost of service to the carrier including terminal expenses properly chargeable as freight charges, is greater on the product than on raw corn. (2) The present rate on corn is down to the lowest point that railroads can possibly reach on corn and leave any profit, and lower than they can go on the product without loss. (3) The downward pressure of competition in the transportation of corn is greater than on the products of corn.

The Commission felt that the reduction by the carriers of the differential between corn and corn products from $4\frac{1}{2}$ to $2\frac{1}{2}$ cents per 100 pounds had remedied in large part the evils complained of. Accordingly its former order was vacated and no further order was issued.

In another case¹ which had to do with the difference in rates on corn and corn meal shipped from Kansas points to points in Texas, the Commissioners said:—

We find that the difference in the cost of service in the transportation of corn and corn meal does not exceed three cents per 100 pounds, and that there are no other conditions surrounding the transportation of these two commodities like differences in value, greater liability to injury, etc., which justify a difference in rate of more than three cents.

The last case² in this group which we shall cite is of much interest, for the decision of the Commission

¹ Board of Railroad Commissioners v. The Atchison, Topeka & Santa Fe R'y Co., 8 I. C. C. Rep. 304.

² Cattle Raisers' Association of Texas v. Missouri, Kansas & Texas R'y Co. et al., 11 I. C. C. Rep. 296.

rests upon a careful balancing of the costs of service, cited by the defense as a reason for high rates, against certain other costs cited by the complainants or discovered as a result of the investigation which would have tended to make low rates on the traffic in question natural and desirable. The case deals with the matter of an advance in rates on live cattle shipped from Texas points to northern ranges and also to the principal cattle markets, Chicago, St. Louis, and Kansas City. The advances in rates had extended over a period of several years; and by 1903, when the complaint was filed, the rates were "higher than any rate ever in effect since rates were filed with the Commission."

The carriers claimed that the rates formerly in force were the result of severe competition and furnished no standard of reasonableness. They defended the existing rates by an elaborate showing as to the costs of service of the cattle traffic as compared to the costs of transporting other commodities. Since the costs cited by them appear in the Commission's decision, presently to be quoted, it will not be necessary to give them at this point. One thing in which both the carriers and the Commission seemed to agree was that the case should be decided on the basis of cost of service. Even the usual practical objection to this method of determining the rate disappears in the light of the Commission's statement that "*it is possible to determine with reasonable accuracy the cost of transporting a train of this live stock between any two points.*"¹

The Commission, however, did discuss other considerations than cost of service which might justify the increase of rates. It discovered that neither the

¹ *Italics mine.*

carriers' need for revenue nor any increase in the value of the commodity transported could legitimately serve as an excuse for the advances. On the contrary the ton-mile revenue from the cattle traffic was greater and the cost of movement no larger than in the case of other freight, while the cost of producing cattle in Texas was greater than at the time the first advances in rates were made. The new rates were not the result of competition but were the result of concerted action on the part of the roads acting through the Southwestern Tariff Committee.

Returning then to the cost of service arguments put forth by the defendants, the Commissioners said: —

These traffic officials all base their opinion upon the assumption that the cost of handling this cattle traffic is much greater than the average cost of handling all traffic. The reasons which they give for this assumption do not, as we have seen, bear examination. They all say that the cattle traffic is more expensive because cattle trains are shorter than other trains, but the testimony in this record shows that they are in fact longer. It is said that the loading of a cattle car is less than the average loading of other freight cars, and, therefore, that the paying revenue of the train in which they are transported is less, but, it appears that while the loading of the individual car is lighter, the revenue freight in the cattle train is as much or more than in the average dead freight train. Other disabilities are pointed out. Some of these are capable of being expressed in dollars and cents as the cost of maintaining pens and shutes, the cost of bedding and disinfecting cars, the cost of loading, the extra hazard peculiar to this species of traffic, etc. These aggregate from one to one and one half cents per hundred pounds. In addition there are certain minor matters like the use of a longer caboose, the return of the attendants, the stopping to feed and water which are not susceptible of any estimate upon this record, but of which the aggregate cannot be large. There is the more important fact that this traffic must be given an express service, but we have seen that the greater expense of providing a fast service depends largely upon the fact that the train loading of revenue freight is lighter, whereas here the loading is at least equal to the average. There is a very substantial disadvantage growing out of the fact that a large percentage of cattle

cars must be returned empty; but here again the difference is less than one would suppose from a casual consideration of the subject. The empty movement in case of all traffic is necessarily large, being some thirty per cent as applied to the entire car mileage of most of the defendants as against forty or forty-five per cent in case of stock cars. This, however, is a substantial disability against this traffic.

If we turn to the rates themselves we find that the average revenue per ton-mile which these stock rates yield is greater in all cases and much greater in some cases than the average rate per ton-mile. We also find that while the average rate per ton-mile in case of all these defendants decreased materially from 1892 to 1903 these stock rates, even before the advances of 1903, had in most cases increased. . . . The cost of operation has increased in some respects, but this has been more than offset by the introduction of improved methods and especially by the large increase in the volume of the traffic.

The Commission accordingly reached the conclusion that the advances in rates made during 1903 were unjust and unreasonable and that the existing rates were therefore "unjust and unreasonable by the amount of said advances." The carriers having made their defense strictly on the plea that the costs of moving the live stock were higher than for ordinary freight, the Commissioners followed this line of argument and declared that "the average cost of moving live stock is not greater than the average cost of moving all commodities." To show, however, that they fully agreed with the carriers that the decision should be reached on the basis of cost of service arguments, they say: "In determining a reasonable rate the cost of performing the service, as has been just observed, is one element in that rate, and cost of movement is an important item in arriving at the entire cost of service."

There are many other cases in which the Interstate Commerce Commission has made use of the method of comparative costs to enable it to judge of the rea-

sonableness of a given rate. Usually, however, other arguments are relied upon in part, and the cost of service principle is therefore presented in less distinct fashion than in the preceding cases.

3. *Comparison with Rates Elsewhere*

A second method of comparison employed by the Commission in certain instances has been to judge of the reasonableness of a given rate by comparing the costs of performing the service with the costs incurred on other roads or on other parts of the same road where the rates were believed to be reasonable. There are not many cases of this sort and they need not long detain us.

Complaint was made in one case¹ that the rate for transporting cotton from Meridian, Mississippi, to New Orleans was too high. The investigation showed that if more than 20 cents per 100 pounds, or about a dollar a bale, were charged, it would be more profitable for shippers to send their cotton to the eastern market by another route. At the same time, it was apparent that such a low rate would be an unprofitable one to the carrier, since, even with the rates then in force, the carrier was earning little more than operating expenses. The Commissioners declared that while the fact that a rate was unremunerative must not be overlooked, this would not justify rates grossly excessive. They decided that the costs of sending cotton from Meridian to New Orleans could not be more than the costs of sending it from Shreveport, Louisiana, to New Orleans, where the rate was \$1.50 per bale. The carrier was accordingly ordered to

¹ *New Orleans Cotton Exchange v. Cincinnati, New Orleans & Texas Pacific R'y Co. et al.*, 2 I. C. C. Rep. 375; 2 I. C. R. 289.

reduce the Meridian-New Orleans rate to \$1.50 per bale.

In another case¹ the defendant carriers had been shipping wheat to market over a route 478 miles in length, having many heavy grades and curves, and had charged 32½ cents per 100 pounds for such shipments. There was, however, a shorter route, only 311 miles in length, having only a few ascending grades and these exceedingly light. Wheat was not sent by this route, altho it would have been much cheaper thus to transport it. The Commissioners held that the rate of 32½ cents might be presumed to be reasonably remunerative over the longer and more expensive route and must therefore be excessive over the less expensive and more direct route. "The complainants," it was said, "have a just and reasonable right to have the products of their farms carried to market by the shortest and least expensive routes at a reasonable through rate."

In the important case of *George J. Kindel v. the Boston & Albany Railroad et al.*² complaint was made that rates on cotton piece goods in less than car load lots shipped from Boston, New York, and other Eastern points, were charged \$2.24 per 100 pounds to Denver, while only \$1.50 per 100 pounds was charged to San Francisco, 1400 to 1600 miles beyond Denver. Car load lots were charged only \$1.00 per 100 pounds to San Francisco but a special car load rate was refused to Denver.

The Commissioners concluded from their investigation that the low rates to San Francisco were permissible under the circumstances, in order to meet

¹ *Newland et al. v. The Northern Pacific R. R. Co. et al.*, 6 I. C. C. Rep. 131; 4 I. C. R. 474.

² 11 I. C. C. Rep. 495.

water competition, *provided* that these rates were not so low as to cause the transportation of such merchandise at a loss and thus compel other traffic to make up this loss. If, however, the existing rates to San Francisco were sufficient to cover costs, then the high rates to Denver which resulted from a combination of several local rates must be regarded as unreasonable. The Commissioners said: —

The actual cost of carriage is ignored, as an element in rate making in this method of charging and collecting the local rates for through shipments. The local rates are fixed by the carriers to cover all terminal expenses on the shorter hauls, charges and delays to the initial and terminal points, and it is not reasonable on a joint through haul, where these terminal delays and expenses are spared at the intermediate points, that such economy in transportation should not be shared by the shipper who must bear the burden of the long 2000 mile haul, and it is unreasonable and unjust on the part of the carriers that the long, uninterrupted through route, even if no through rate is agreed to, should bear the full local rates.

On the supposition then that the \$1.50 rate to San Francisco covered the costs of transportation, the Commissioners claimed that the same rate would prove sufficient to Denver. They remarked: —

It would seem that the \$1.50 must pay a reasonable profit to the carriers and it is our judgment that the rates in question should not exceed that. Surely a rate which pays expenses for a 3400 mile haul will yield reasonable profits for a haul not much above half that distance when the service actually rendered is far the cheaper and easier half of the total haul.

4. *Car load and Less than Car load Shipments*

The rule that commodities shipped in car load lots usually take lower rates per 100 pounds than when shipped in less than car load quantities itself rests upon the principle of cost of service. This fact has been frequently emphasized by the Interstate Com-

merce Commission, as in the case of *The Harvard Company v. The Pennsylvania Company et al.*¹ where it is said that the mere fact that one article is shipped in greater quantities than another when there is no considerable difference between them in "bulk, weight, and value," and "in expense of handling and hauling," constitutes no reason for a difference in their rates and classification.

Mere quantity not measured by a recognized unit of quantity adapted to the carriage, and lessening the expense of handling and carriage, cannot be allowed to affect rates in the transportation of property. . . . The lower rate in proportion upon car loads of freight, treating a car load as a unit, than upon the same article in less than a car load does not come within any such principle as this, but is founded altogether on different considerations.

In the following cases the Commissioners make it clear that these "different considerations" pertain to the cost of transportation. Another Standard Oil case² furnishes the first illustration.

Complaint was made, among other things, that the carrier was charging exceedingly high rates for barrels of oil when shipped in less than car load lots, and these rates were shown to be in many instances more than double the rates on barrels sent in car load quantities. After hearing the arguments on both sides, the Commissioners decided to sustain the existing difference in rates. They reached this conclusion with great reluctance because the rates on less than car load lots were so high that they seemed to be "in their nature prohibitory." The Commissioners were careful to say that such great differences in the rates would not be permissible in the case of other kinds of freight and were only allowed in the oil traffic because

¹ 4 I. C. C. Rep. 212; 3 I. C. R. 257.

² *W. C. Schofield et al. v. Lake Shore & Michigan Southern R'y Co.*, 2 I. C. C. Rep. 90; 2 I. C. R. 67.

"the cost of service is very considerably less in the case of shipments in car load lots than in the less than car load quantities." The reasons for this great difference in costs were found to be as follows: (1) The shipment by car load goes direct to destination. It is loaded by the shipper and unloaded by the consignee. On the other hand, freight when sent in less than car loads has to be taken out in parcels, and the expense of loading and unloading is performed by the company. (2) In the case of car load lots only one bill of lading is necessary and only one entry is made upon the way-bill. When less than car load lots are taken a separate receipt or bill of lading has to be given to each shipper and a separate entry for each item is made upon the way-bill. (3) The time occupied in transportation is less in the case of car load lots, for smaller shipments must be sent by local freight trains stopping at every station for which there is a shipment. In this way the time occupied in transporting the smaller lots is from two to three times as long as that required for car load lots. (4) In the case of car load lots there is only one collection of freight charges while for the smaller shipments there are as many collections as there are different parcels. (5) In the case of less than car load lots there inevitably remains vacant space in the cars for which the carrier receives nothing. (6) The risks from loss of fire are greater in the case of oil sent in small lots, for these small shipments are unloaded in the station house, while car load shipments are unloaded at a distant point.

It would be interesting, did space permit, to discuss at length the case of *Thurber et al. v. The New York Central & Hudson River Railroad et al.*,¹ one of the

¹ 3 I. C. C. Rep. 473; 2 I. C. R. 742.

most perplexing cases which have come before the Commission for its decision. The complaint concerned the rates given on groceries shipped in less than car load quantities from New York to retailers in the central and western states. Much lower rates were given on car load shipments, and it was alleged that this discriminated against eastern distributors. Emphasis was placed by the complainants on social considerations, especially the fact that the normal mode of shipment of such commodities was in small packages. They did not deny that some difference might be made in the rates on car load and less than car load quantities, but held that such difference "should be so small as not to consume the commercial profit on the goods." The carriers on the other hand based their defense mainly on the lower cost of handling car load shipments.

The Commissioners denied that it was the business of carriers so to fix their rates as to preserve a commercial profit to manufacturers or jobbers, but they also declared that cost of service was not the controlling principle in this case. The controlling principle was the interest of the general public. The public was more interested in miscellaneous shipments of groceries than in solid car load shipments. The carriers should accordingly adjust their rates so as to conform to the existing business of the country. At the same time the Commissioners recognized that the car load was a practicable unit of quantity and that if an article moved in sufficient volume it was reasonable to give it a car load classification. The difference between car load and less than car load rates, they said, is "based on the well known fact of a difference in the cost of service by the carrier."

The Commissioners accordingly decided that the

carriers were not justified in charging more for car load shipments when a full car load was sent from many consignors to many consignees, than when sent from one consignor to one consignee, but "in the case of smaller shipments to many consignees at many destinations, there is such material difference in the cost of service, in the earnings of cars, and in car detentions, as to justify a higher charge."

In spite therefore, of the Commissioners' statement that cost of service was not the controlling element in the case, it would appear that, in the final analysis, cost of service determined the Commission's decision with reference to a difference in the rates on car load and less than car load quantities.

In the case of *The Buckeye Buggy Company v. The C. C. C. & St. L. Railway et al.*¹ the Commissioners held that inasmuch as the practice of giving car load rates on buggies had been followed by the carriers and held legitimate because the cost of handling this business was less, the same rule must be applied whether the consignor or consignee was the owner.

The defendants may clearly require that the goods shall be located at one time and place, that but a single bill of lading shall be issued, that the shipment shall be from one consignor to one consignee, but when these goods are so loaded, when by the terms of the sale they become the property of the consignee upon delivery to the carrier, the carrier has no right to inquire whether the consignee obtained his title from one or from several owners. If they accord a car load rating in case the consignor is the owner, they should extend the same privilege when the consignee is the owner.

In the last case² which we shall cite to illustrate the application of the cost of service principle, the Commission decided that if \$100 was a reasonable

¹ 9 I. C. C. Rep. 620.

² C. M. Barrow v. Yazoo & Mississippi Valley R. R. Co., et al., 10 I. C. C. Rep. 333.

rate for "transporting twenty-five horses, which is about an average car load, together with an attendant, \$99 is too much for transporting four horses with no attendant."

To the average man the unreasonableness of the latter charge would appear to be because the four horses were worth less than twenty-five, and it would seem that this consideration should have appealed to a body of men who had declared "the value of the article carried" to be "the most important element in determining what shall be paid upon it." The Commissioners did not however advance this argument in the present case but explained their decision on the basis of a difference in the cost of service. "The car may perhaps weigh the same in either case, but the total weight of the full car load is considerably more, the actual cost of hauling is more, the expense of unloading and reloading is more." It was accordingly suggested that the defendant so modify its rates as to charge no more than \$72 in the aggregate for transporting four horses, if the rate of \$100 for a full car load remained in force.

Our review of the cases in which differences in the costs of service have been cited by members of the Commission as reasons for differences in rates shows that the Commissioners, as well as the traffic officials of the various railroads, have made much greater use of the cost of service principle than their preliminary utterances would lead us to expect.

It has seldom happened, of course, that an effort has been made to apportion the charges strictly in proportion to the costs of rendering a specific service. It is doubtful, however, whether any class of business men to-day undertake to do this. Their method is

rather that followed by the Commissioners in the cases which we have considered. A merchant or manufacturer by comparing the receipts from one department or one line of goods with the outlay for this department and then comparing these net returns with those in other departments, arrives at certain conclusions as to the relative profits from the several lines of business. The fixed expenses chargeable to the business as a whole he assigns in a more or less arbitrary fashion according to labor costs, or to the cost of the material or, even more loosely still, according to floor space, it may be, or according to the amount of sales or the number of employees, or whatever in his business seems to be the best unit of measurement. By carefully comparing the rates of growth of the various departments with the growth of his profits, he is able year by year to correct his former standards of measurement.

In the same way railway managers sometimes apportion their fixed expenses according to the ton-mileage of their different kinds of freight. In applying the comparative method of determining costs and of fixing charges in accordance thereto it would seem that the Commissioners and the railway officials have been merely pursuing the methods generally known and accepted by most careful business men, and the cost of service principle doubtless is capable of much the same application in the railway business as it is elsewhere, — unless it be in academic treatises on economics.

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PROPOSALS FOR STRENGTHENING THE NATIONAL BANKING SYSTEM. III.

A CENTRAL BANK OF LIMITED SCOPE

SUMMARY

A central bank with large lending power will not fit into our system, 71. — And it is not necessary, 74. — Its primary functions: (a) The settlement of clearing house balances, 77. — (b) To ensure the use by the other banks of their resources in emergencies, 79. — (c) Handling the domestic exchanges, 81. — The clearing of country checks, 84. — Method of selecting the directorate, 86. — Prohibition of collateral loans, 87. — The bank acceptance an unnecessary and hazardous device, 88. — Capital of the central bank, 89. — Note issue, 90. — Retirement of the gold certificate and the U. S. note, 91. — Statement of account of the proposed bank at the opening of business, 92.

I

THE present paper will be concerned entirely with the elucidation of a plan for a central bank; but as the effectiveness of the plan would largely depend upon the adoption of the proposals which were brought forward in the two preceding articles in this series, these proposals may be summarized here by way of introduction.¹ The establishment of true savings departments by the national banks with segregated deposits payable at notice, which might be invested in mortgages, was advocated as a means of enabling the banks to employ more of their funds at home, thus reducing somewhat the strain upon the city banks in emergencies. Two classes of banks, local and reserve agent banks, were proposed to take the place of the present three classes. Both classes of

¹ See the issues of this Journal for February and August 1910.

banks might be established anywhere, but those choosing to become reserve agent banks would be required to have a minimum capital of \$500,000 and would be obliged to carry a cash reserve of 25 per cent, a cash reserve of 10 per cent being required from local banks. In order to render more certain the use of reserves in emergencies it was suggested that the banks should be allowed to go below reserve requirements upon the payment of a fine sufficiently onerous to ensure the maintenance of reserves in normal times, but not so high as to prevent their use when really needed. An asset currency limited in amount to 40 per cent of the capital and surplus of the banks was proposed, to take the place of the bond-secured notes. This separation of the circulating medium from government bonds would enable the government to avoid the accumulation of a large surplus in the treasury in the future. Finally, it was pointed out that elasticity cannot be secured while the present practice of paying interest on bankers' deposits continues. The payment of interest upon minimum weekly or fortnightly balances during a period of six months was suggested as a way out of this unsatisfactory condition of affairs.

The adoption of these proposals would diminish materially in emergencies the strain upon the reserve-holding banks of the cities and would also increase somewhat and make more available the money holdings of the banks generally. But while the power to meet the demand for loans and also that for cash from depositors would be increased, it must be admitted that no absolute certainty is secured against that senseless scramble between the banks to strengthen themselves which more than anything else has caused the breakdown of our credit machinery on every

occasion of severe strain in the past. Bankers must have confidence in the means at their disposal, and the public must have unquestioned trust not only in the ultimate solvency of the banks but also in the ability of the banks to maintain payments at all times; otherwise, no system, however strong it may be, can endure the strain incidental to trade reaction without danger of financial panic.

Now, altho one may feel convinced that the means which have been suggested would be ample to enable the banks to handle emergencies effectively, it becomes evident that something more is needed when we find that the officers of our large reserve-holding city banks are of the opinion that, even with a very considerable increase in the ratio of their cash holdings to deposit liabilities, it would be impossible to respond to the demands which would be made upon them by country banks in a crisis of the severity of that of 1907. On the other hand, there is apparently a widespread and growing belief among bankers that difficulties which have proved overwhelming in the past can be met and even removed through the establishment of some kind of central bank or central authority in our banking system. It is urged, and with much reason, that the results achieved in all countries which have made trial of institutions of this kind would give it an initial prestige which would be a source of great strength. It is also pointed out that we should then have a banking influence exercised with a deep sense of responsibility, and above all that we should have a reserve of cash and of lending power which could certainly be turned to in emergencies.

The promise of improvement through the establishment of a central bank would seem to be bright if it is so devised as to fit into our existing complex

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banking machinery. This possibility does not, however, lessen the importance of proposals designed to strengthen the existing banks such as those with which the preceding articles have been concerned. On the contrary their importance is rather enhanced if the attainment of the desired results is to be secured through the device of a central bank. The danger that other banks will rely wholly upon it for assistance in emergencies is one which must be squarely faced. The restraining power which a central institution can exercise in periods of business activity over twenty thousand or more independent local banks is certainly slight, far less than that over the comparatively small number of banks in European countries in which branch banking prevails. Influenced by the natural desire for large profits, our banks have shown no evidence of any appreciable willingness to maintain themselves in a stronger condition than was required by law. It is to be feared that the mere existence of a central bank will tend to foster the growth of unsound conditions by relieving the other banks of all sense of responsibility. Moreover, should the entire burden in emergencies be imposed upon the central bank, its power to make loans and to extend credit must be of colossal magnitude if it is to be able to prevent the complete breakdown of our credit machinery. On the other hand, regarded simply as one feature of a plan for strengthening our banking system, a central bank with restricted functions and power can be devised which gives far more certain promise of improvement.

Writing in this Journal for May, 1909, I pointed out at some length that the most serious and, perhaps, insurmountable obstacle to the successful working of a central bank in this country is found in the employ-

ment in normal times of even a part of the vast lending power which was an essential feature of all the plans for such an institution which had been brought forward. Nor has this difficulty been overcome in any of the proposals which have subsequently appeared. Further reflection, however, has led me to the conclusion that a central bank is feasible for this country; but only upon two conditions. In the first place, the adoption of measures designed to strengthen the other banks is necessary in order to diminish the strain upon the central bank and consequently the need of granting it the colossal lending power which will otherwise be indispensable. In the second place, it must be generally recognized that it is not the primary function of a central bank to strengthen our system by means of the advances which it may make to other banks. Through a central bank the machinery can be provided which will prevent the scramble between the banks to strengthen themselves in emergencies and which will also greatly diminish the withdrawals of cash by individual depositors except from banks whose solvency is in question. If this can be accomplished it would never be necessary for a central bank to make large advances to the other banks. Its lending function would be distinctly secondary and its power to extend credit could be limited to such comparatively small proportions that the difficulty of handling its loan account in normal times would not be of serious moment. But to most of those who are favorably inclined towards the central bank proposal much of its attractiveness is found in the improvements in our credit arrangements which are expected from its lending operations. Moreover, the view that a central bank with extensive lending power cannot be made to fit into our system has been con-

troverted by high authority¹ and the conclusion that this view is without real foundation has gained wide acceptance. For these reasons it seems advisable to give some further consideration to the matter before introducing the particular proposal which is the main concern of this article.

Foreign example, tho helpful, must be followed with extreme caution on account of some fundamental peculiarities in our banking organization and practice. The power of banks to extend credit in the form of deposits is restricted in all countries having a central bank, with the single exception of England, on account of the limited use of checks. Consequently when a given amount of accommodation is secured from the central bank the other banks are not able to make very much more than an equivalent increase in their own loans. The effect of advances made by the Bank of England is far more considerable. Upon the notes of the Bank as till money and upon balances at the Bank as reserves rests the vast deposit credit structure of the other banks. Except when the proceeds of loans are being used to meet foreign obligations or payments to the government, advances by the Bank of England serve to increase, tho indirectly, the foundation upon which the other banks extend credit in the form of deposits to several times their amount.² The lending operations of the Bank do not, however, result in dangerous credit expansion because its power to extend loans is not great, and even that limited power is exercised with great caution. It is unable to extend credit in the form of notes, since its note is

¹ See Paul M. Warburg's *A United Reserve Bank of the United States*, pp. 32-42.

² The process is indirect because the other banks do not rediscount at the Bank of England. It is the withdrawal of money lent to bill brokers, who in turn are obliged to borrow from the Bank, which serves to increase bankers' balances at the central institution.

virtually a gold certificate; and tho its deposit credits have the same effect upon the lending power of the other banks, the general economic and financial position of the London money market seldom permits of their rapid increase. A large amount of foreign money is regularly employed there, and any considerable increase in the loans of the Bank would at once depress rates and induce the withdrawal of foreign lenders.

In the United States the expansive effect upon the volume of credit of the advances made by a central bank, whether in the form of notes or deposits, would be similar in kind to that noted in the case of the Bank of England. But the difficulties to be met would be far more unmanageable. It is agreed upon all hands that there is no likelihood of securing favorable action upon a plan for a central bank if it is to compete in any substantial way with existing banks. Its loans are to be made to the other banks either in the form of notes, which, unlike those of the Bank of England, are to be credit instruments; or in the form of deposits on its books. Both its notes and deposits would be considered (and necessarily so if the bank is to be able to handle emergencies) as reserves by the other banks. Upon these reserves they would without much doubt build up deposit credits to the extent permitted by law or, in the absence of legal limitation, to such limits as might be deemed safe by the officers of the individual banks.

It is contended, however, that the danger of excessive credit expansion resulting from the operations of a central bank would be slight because the Bank would rediscount only paper of the very highest quality, and that it would be overcome entirely by means of a sliding scale of discount. But the character of the security which will be acceptable will not appreciably

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affect the situation one way or the other. Practically all banks have some paper which would meet the most exacting of tests. The root of the difficulty is found in the use which will be made of the additional lending power thus secured by the other banks. While in some instances this power might be used to make further loans of the same high character, there is quite as great a possibility of its employment in underwriting syndicates or in collateral loans to customers the proceeds of which will be used for speculative purposes.

The effectiveness of a sliding rate of discount in preventing undue credit expansion is also far from certain. Where, as in England, foreign financial dealings are large relatively to those of purely domestic origin, the course of the foreign exchanges is a delicate barometer of the credit position, and it is a comparatively easy matter for the officers of central banks to adjust their rates to meet changing circumstances. In the United States the credit furnished by the banks is almost entirely utilized for domestic purposes. Excessive credit expansion is but remotely reflected in the market for foreign exchange. It would, therefore, be unusually difficult for the central bank to adjust its rates so as to promote business activity when that would be of general advantage and to exercise restraint when that becomes necessary.

But there is a far more serious obstacle to successful results from a sliding scale of discount. Partly on account of the differences in the average quality of loans but mainly on account of the absence of branch banking, there is a wide difference in lending rates between various sections of the country. If the central bank is to lend everywhere at a rate which would just make it of advantage for the banks of the

eastern money centers to resort to it for discounts, it would be overwhelmed with requests for loans from banks in those sections of the country in which rates are high and an excessive proportion of its funds would be thus absorbed. It might, indeed, lend at different rates in the various sections. But it is extremely unlikely that public opinion would tolerate such differences, especially if the bank were granted a monopoly of issue and held large government deposits. The demand that lending resources be distributed evenly has not occasioned serious difficulty to central banks in other countries,¹ but in the United States there is certain to be such a demand, because owing to the absence of branch banking it would be one of an entirely reasonable nature.

Credit is but imperfectly fluid in a system of numerous independent local banks. Loanable funds flow readily from country banks and those of small cities to the large cities and especially to New York. But with us, unlike the countries with branch banking, the movement goes no further. Our money centers are reservoirs for the collection of funds which cannot be employed either temporarily or permanently at home, but they are unsatisfactory distributing agents. Even tho the demand for loans in its neighborhood is large, the local bank can get little from the money centers beyond what it has deposited or employed there. In England it makes little difference where or to whom the Bank of England makes its advances. Credit may be likened to a reservoir the general level of which is raised or lowered by the loans of the central bank. In this country there are as many reservoirs as there are banks or at least locali-

¹ The agrarian demand for agricultural credits has been the nearest approach in Continental countries.

ties. Loans made by a central bank in Boston or Baltimore or even in New York would not enable banks in Seattle or Galveston to lend more freely. In these circumstances a central bank would be obliged to lend in each locality and enormous pressure would be brought to bear to remove any obstacle, such as a discriminating rate of discount, even tho it might be based upon the soundest of banking principles. And in carrying through contraction the management of a central bank would be faced by an even more perplexing problem. It would be necessary to consider the situation in each locality and to apply pressure only where credit had been expanded beyond safe limits and in proportion to the extent of the expansion. Can we expect local opinion to coincide generally with that of the management of a central bank? Often, it is to be feared, aggrieved localities would feel that they were being treated less liberally in the case of expansion and more severely in the case of contraction than neighboring and competing communities.

II

All these difficulties, it will be observed, have a common origin. They will disappear if it can be shown that a central bank can perform its essential functions without that enormous lending power which will bring upon it an irresistible demand for accommodation from other banks in periods of active business. It would then be recognized at the outset that it is not to be primarily a lending institution and that its powers can be so limited as to shield it from unreasonable requirements.

There is a consensus of opinion that the withdrawal and hoarding of cash in emergencies by both individ-

uals and banks has been due not so much to doubt of ultimate solvency as to fear that the banks would temporarily suspend. If this fear can be removed, emergency requirements for cash and the consequent sudden contraction of loans to which the banks have resorted in the past, would no longer be of serious moment. The mere existence of a central bank firmly established in public confidence would largely do away with those temporarily large cash requirements which have proved too heavy a burden for banks. Certainly it would not have been necessary for it to pay out any such quantity of money as would have been needed by existing banks in order to allay distrust in any one of our past crises.

But the diminution in cash withdrawals through the establishment of a central bank is not limited to the general effect of the greater confidence in our banking system which it might create. Through its means more direct influences can be exerted which will so reduce emergency withdrawals that they will become a negligible factor in the working of our credit machinery. This can be accomplished with advantage to the other banks and without involving any loss of liberty in the management of their affairs. The means are very simple: it is only necessary to make the central bank the organ for settlements of clearing house balances in the important cities and also for handling payments and transfers of money between different sections of the country. In other words, its primary function would be that of a clearing house for the entire country with which the other banks would become so closely related in normal times that it would be entirely unlikely that the connection would be severed in emergencies.

The importance attached to this function is the

fundamental novelty in the present central bank proposal. Its significance must therefore receive somewhat detailed exposition.

The ordinary clearing house affords a familiar indication of what may be accomplished through a central bank in economizing the use of money by diminishing the aggregate withdrawals from the banks and by making them more regular in amount from day to day. A clearing house has the immediately practical function of simplifying the daily settlements between the banks of a locality. But its operation has another and even more important result: that of reducing very largely the amount of money required in the conduct of banking, at least in normal times. If, for example, each bank in New York made daily cash settlements with all the other banks of the city singly, it is obvious that a very much larger part of the money holdings of the banks would be in constant use. It might even happen that all the money held by a bank would be paid out in meeting unfavorable balances with some of the banks, tho it might be more than replaced in the course of the day by money received from the remaining banks against which it had favorable balances. Clearly, then, if clearing balances were settled by means of transfers on the books of a central bank instead of with cash there would be a still further economy in its use. This is the London practice; and it reduces materially the amount of coin or notes which would otherwise be withdrawn day by day from the Bank of England. The aggregate balances of the other banks at the Bank of England may remain stationary while wide fluctuations may be of daily occurrence in that of any particular bank. Fluctuating withdrawals of cash are avoided which, even tho temporary, would

make it necessary for the Bank to hold a larger reserve than is now required.

Economizing the use of cash is not, however, the most important result which would follow from the settlement of clearing house balances through a central bank. It would stand ready to make advances when necessary to banks whose reserves had been depleted. The possibility of securing such accommodation would render entirely unnecessary the resort to the issue of clearing house loan certificates in emergencies. Advances by the central bank would be far more effective because they could be made without the delay and inevitable publicity which destroys much of the usefulness of that instrument as an emergency device. Moreover, the working at cross purposes among the banks, which in the absence of provision for the equalization of reserves has always continued after the issue of loan certificates, would be entirely prevented.¹ The central bank would be in position to refuse accommodation to banks seeking to strengthen themselves unnecessarily when well able to meet their obligations with their own cash resources.

It is to be assumed that the central bank, if it is to perform such functions in any adequate fashion, would establish branches in all the important commercial and financial cities of the country. Let it be assumed also that settlement of clearing house balances would generally be made by means of transfers on its books. Then the following results of the first importance would follow. The Bank would be enabled to handle much business by means of deposit

¹ This subject is discussed in the first of the present series of articles, in the February number of this Journal, pp. 234-240. It is much more fully treated in the writer's *History of Crises under the National Banking System* recently published by the National Monetary Commission. See especially references under Clearing House Loan Certificates and Equalization of Reserves in the index.

credits on its books which would otherwise involve the issue of notes or the withdrawal of coin from its reserves. The pressure on the Bank in emergencies would be materially diminished, because it would be in position to insist upon the use of the cash resources of the other banks. This would be a very great gain, especially if means of strengthening the other banks, such as were urged in the two preceding articles, should be adopted. Instead of relieving the other banks of their responsibilities, the central bank, it will be seen, would exert a powerful influence in securing the regular performance of their duties. Finally, the vital cause of weakness which has invariably manifested itself on every occasion of crisis would largely disappear. At such times our banking system has been subjected to intolerable strain because of the wholesale withdrawal by country banks and those of the smaller cities of balances deposited in the banks of the large cities and especially in the banks of New York. The unreasoning fear has prompted this action to some extent, the main cause has been the well-grounded belief that the city banks would discontinue currency shipments and temporarily suspend payments. Confidence that payments will be maintained by city banks will certainly do much to reduce withdrawals within limits set by the actual needs of the country banks, and those needs will in turn be greatly lessened if individual depositors acquire confidence in the capacity of the banking system as a whole to meet occasions of severe strain.

There remains for consideration still another means for diminishing and regularizing the movements of cash between banks by means of facilities which can be provided by a central bank. At present many banks are separated by enormous distances from

their reserve agents. When a bank thus situated finds it necessary to increase its cash holdings, either to meet regular requirements, such as those for crop-moving purposes, or in order to be on the safe side in emergencies, it will naturally call for a larger shipment of currency from city banks than there is any great likelihood that it will be obliged to use. The available statistics tho incomplete indicate that very much more money is withdrawn from city banks every autumn than is actually used by the country banks for crop-moving purposes.

This defect in our system can be remedied and at the same time other important advantages gained if the central bank establishes a system for handling the domestic exchanges between all the places in which it has branches, by means of which all payments between banks can be met by transfers on its books. The Reichsbank has perfected a system of this sort which has proved of great advantage, making it possible to make payments throughout the country speedily and at a minimum of expense.¹ The service is open both to banks and to individuals, the only condition being the maintenance of a balance at the Bank the amount of which is determined by the volume of transfers in each particular instance. Whether in case such a system is adopted in this country it should be available for individuals need not be definitely decided at the outset. Until the machinery is perfected it would seem the wiser course to restrict its use to the banks alone. The economy in the use of cash which might be secured in this way is evident. Suppose a bank in Utah were to draw upon its balance

¹ For full details regarding the Giro-verkehr system of the Reichsbank see the volume entitled *Miscellaneous Articles on German Banking*, pp. 171-213, published by the National Monetary Commission.

in some one of the New York banks. The latter would simply transfer the amount through the central bank to the branch of the central bank in the vicinity of the Utah correspondent. The latter, having its funds in its immediate neighborhood, would only draw them out gradually from day to day as the need arose. Moreover, the central bank would not have to ship funds from New York; even if, like the Bank of England, it were only able to issue a note which is merely a gold certificate, it would still be able to keep a supply of its notes at all of its branches, and from this supply it could pay out anywhere an amount of notes equal to its cash holdings, which would doubtless be largely concentrated in New York. Finally, it may be noted that this system would make it impossible for the reserve-holding city banks to refuse to meet the demands of their banking depositors for funds. The country bank would be able to send a draft on its reserve agent for collection through the central bank and this draft would go through the clearing house in the city where the reserve agent was situated.

Apart from its importance in emergencies a universal system of transfers through a central bank would have important advantages in normal times. The present situation regarding the domestic exchanges is far from satisfactory either to the business community or to the banks. Collections and payments are subject to delay and involve heavy expense, burdensome to most banks tho to some extent shifted upon their customers. Practically the entire expense of the domestic exchanges could be saved. The actual cost to the central bank would be far less than that inevitable under the present system, or lack of system; and such expenses as it would incur would be met by the profits arising from the balances which the other

banks would be obliged to maintain in order to make use of the service. The maintenance of these balances need not be an added expense to the banks, even tho no interest upon them could be allowed. Such balances might properly be included as a part of the required cash reserves of the banks, not merely a part of their reserves which may be deposited with other banks. It seems neither necessary nor desirable to overturn our present system of deposited reserves by taking away a large portion of the funds with which the present reserve-holding banks conduct their business and transferring them to a central bank. Such a great change would make the central bank an institution of unwieldy size and would deprive country banks of all return upon that part of their reserve; and it might lead to a wasteful retention of all their required reserve in the form of cash in their own vaults. The plan proposed would give the central bank a moderate volume of bankers' deposits, leaving the present arrangement unchanged aside from the modifications suggested in the first article of this series.

One further means of improvement remains for consideration. It is closely related to the proposal which has just been discussed, but does not involve any action on the part of a central bank. In a country so large as the United States it would be difficult and perhaps undesirable to establish a system for collection of all checks through a single institution. Tho experience might indicate that such an arrangement was feasible, it would greatly simplify matters at the outset to provide through a central bank only the machinery needed to make transfers between the localities in which it might open branches, leaving to the various clearing houses the task of handling

settlements in their immediate neighborhood. Already a few clearing houses (among which that of Boston is the most important) have in successful operation arrangements for handling checks from surrounding country banks. The cost of collection has been materially reduced; to such an extent that banks can afford to take country checks at par. The average time for collection has also been greatly reduced, with the result, among other advantages, of preventing the vicious practice resorted to by some weak banks of living largely upon the proceeds of collections for which they remit only after much delay. This method of handling country checks seems to have had something to do with the maintenance in New England of regular settlements between banks even during the crisis of 1907. Where such a mechanism is provided, ensuring the steady and automatic presentation and payment of checks and drafts, there is much less likelihood that a bank will resort to delays and evasions as a means of strengthening itself in emergencies than under a regime which allows even in normal times more or less habitual delay.¹

With our existing banks strengthened in ways such as were suggested in the two preceding articles, and with a central bank in position to insist upon the full use of their resources in handling emergencies, there would be little need of direct assistance from that institution. It should have sufficient lending power to give confidence in the stability of our banking system, but not the enormous strength which would be required if it were to be the entire support of our credit structure in periods of financial strain. In short, according to this plan the management of

¹ On methods of clearing country checks see, in the National Monetary Commission Publications, J. G. Cannon, *Clearing Houses*, pp. 58-64, 259-276.

the central bank may be likened to the general staff of an army, while the bank itself in the exercise of its powers will be analogous to a reserve rather than an attacking force.

III

It does not come within the scope of this paper to present a detailed plan of organization for a central bank, still less to set forth the legislative restrictions upon its powers or the policy which should be followed by its management. These are matters which may be left for settlement if its primary functions are agreed to be of the kind which has been outlined. Attention will be directed in conclusion to a few matters of special importance or difficulty which should be kept in view in working out the details of a plan for a central bank.

Foreign experience shows very clearly that successful results have been achieved by central banks, differing widely one from another in the details of their organization. In the attainment of the objects in view from the establishment of such an institution, therefore, the determination of the most suitable form of organization for this country, while an occasion for constructive thought of a high order, is, after all, a matter of secondary importance. One thing, however, is essential. Much of the opposition to a central bank of any kind is based upon the fear that it might be controlled and used for selfish purposes by the powerful financial groups which control the large reserve-holding New York banks. This is not a very serious danger under any circumstances, because a central bank is made very nearly immune from such attempts by the publicity which attends its operations and even more by the constant public interest

in its condition and policy. As a positive safeguard, however, the form of organization can without difficulty be made such that the fears of the most distrustful should be allayed. The management might be made entirely independent of the shareholders, as is the case with all central banks except the Bank of England. A part of the directorate might well be appointed by the federal government, tho perhaps not the majority; and certainly not the entire board as is the practice in most countries, the representatives of the shareholders having only an advisory function. The national banks, organized into districts for the purpose, might well be empowered to choose some or even all of the directorate, quite regardless of whether the capital is to be subscribed by them or not. Finally, if the capital is to be furnished by individuals, the shareholders might have the power to choose some number, less than a majority, of the board. All three of these parties in interest might share in determining the composition of the management of the bank. By any one of the means suggested the likelihood of the bank being controlled for selfish purposes, even for a short time, would be practically nil and for any prolonged period an absolute impossibility.

There remains for consideration another safeguard which would in large measure render valueless a successful attempt at gaining control. In Europe, central banks employ their funds mainly in discounts or rediscounts of trade bills, tho they also make (invariably at a higher rate) a moderate amount of advances upon collateral security. In this country, it would probably be found advisable to prohibit entirely the making of collateral loans. Such loans have altogether too much vogue at present, our bankers

greatly exaggerating their liquidity, at least in emergencies. Moreover, in the development of the trade and industry of the country they are of far less importance than the commercial bill. To a very considerable extent they merely enable weak holders to retain a large mass of securities which, if held by persons able to pay for them outright, would do much to strengthen our financial position. Of course, the restriction of the business of the central bank to dealings in commercial paper would not prevent resort to it by banks seeking additional funds to be used in collateral loans, since all banks are certain to have some paper of the commercial variety. But it would simplify matters to a very considerable extent for the management, and would also vastly diminish the utility of the bank to any particular financial group and consequently the temptation to seek a controlling voice in its management.

In recent discussion of the advantages which may be derived from a central bank much has been said of the desirability of domesticating the bank acceptance in this country.¹ It is urged that in its absence the loans of the banks are not and cannot become truly liquid and also that through its use a loan market, as wide as the country, may be developed, so that all borrowers would secure the same rate upon a given grade of security. The proposal is attractive. But it is open to serious objections; and fortunately much of the advantage promised can be secured by other means involving far less danger.

If an acceptance will serve the requirements of a borrower he is far more likely to be accommodated by

¹ National Monetary Commission Publications; *The Discount Market of Europe*, by Paul M. Warburg; and *Bank Acceptances*, by L. M. Jacobs.

a bank than if it were necessary to grant him a loan. In both instances the bank incurs an obligation. In the case of the acceptance the obligation is entirely contingent upon the inability of the borrower to meet the bill when it matures. In the case of the loan the bank is subject to the same possibility of loss from the failure of the borrower to meet his obligations; but it has also the immediate obligation to supply him with the proceeds of the loan. The use of the bank acceptance involves a danger of excessive credit expansion which is most serious under our system of twenty thousand or more banks. Foreign example affords no indication whatever of what the results might be. In England, with its small number of banks of large average size, this business has been until recently carefully avoided, having been conducted entirely by a small number of accepting houses. On the Continent the acceptance has been in more general use, having been developed at first by private bankers, a very conservative class. Tho from the beginning of their history adopted by incorporated banks also, it must be remembered that the number of such institutions has never been large and that they have been generally of considerable size.

The bank acceptance would seem to be indispensable in connection with the financing of foreign trade; but for purely domestic trade its utility is relatively slight and its use seems to be generally declining. In our foreign trade it might readily be developed by foreign exchange banks, and this may be expected when rates for loans in this country decline to European levels so that it will be profitable to employ our capital for that purpose.

In purely domestic dealings the advantages promised from the use of the bank acceptance can be secured

by other means involving far less risk of excessive credit expansion. Even at present, many borrowers throughout the country secure through note brokers the lowest rates current on commercial loans. These rates, as well as those on commercial loans secured directly from the banks, are unreasonably high judged by foreign standards, inasmuch as they are higher than rates for collateral loans. If it may be assumed that banking profits are not excessive at present, it follows that all that can be expected through the adoption of any change in our credit machinery is a reversal of the relationship between these two classes of loans.¹ This will be accomplished through the central bank if its operations are confined to commercial paper. Indeed, it is the practice of lending at lower rates on trade bills than on collateral loans by the European central banks, rather than the bank acceptance, that gives the former its relatively low rate. Further, it is the preferential treatment of commercial paper which gives it its liquid character in foreign countries. The same policy followed by a central bank here will make the trade bill, whatever its form, a more liquid asset for the banks than the collateral loan and will consequently secure for it a more satisfactory rate.

Most of the plans for a central bank have agreed in assigning to it a capital of something like \$100,000,000. But this amount would seem to be excessive for

¹ European bankers might employ temporarily idle funds in our commercial bill market if the bank acceptance were adopted, but the amount of such funds would probably not be large enough to affect appreciably the rate for loans. The wide fluctuations in foreign exchange rates between markets separated by wide distances would be an obstacle. Moreover, it would be extremely hazardous to become dependent upon large amounts of so fluctuating a resource. It is not a serious matter in London because in addition to its own domestic and foreign trade the foreign trade of other countries is also largely financed there.

a bank of the kind here suggested. A capital of \$50,000,000 would be considerably greater than that of any other central bank except that of the Bank of England, whose capital is entirely tied up in the government debt. Dividends upon the shares of the bank should be limited either to a fixed maximum or by turning over to the government a progressively increasing proportion of profits. Even with profits limited in this way, however, a large capital invites the danger of an unnecessary extension of the operations of the bank in order to earn a moderate return to shareholders.

Experience shows very conclusively that it is unwise to hamper a central bank with restrictions upon the extent to which it may extend its credits either in the form of notes or deposits. Presumably a central bank in this country would find it desirable to maintain in normal times a specie reserve of at least 50 per cent against its demand liabilities, but it should feel no hesitation in, and certainly should not be prevented by law from, going as far below that proportion as might be necessary in handling emergencies. But legislative provisions, which without limiting the possible amount would impede somewhat the issue of its notes, might serve the useful purpose of shielding the bank from unreasonable demands for accommodation. No advantage is to be gained through an increase in the amount of paper substitutes for coin so long as the present undesirably large increase in the gold supply of the world continues. Both monetary and banking requirements would seem to be best served by granting the bank the right, free from taxation, to issue an amount of notes equal to its gold holdings, while all additional issues upon which there would be no definite limit might be sub-

ject to a tax of at least 5 per cent. The issue of taxable notes need not be regarded as in any way an emergency measure. The tax would restrain the management somewhat but its primary purpose would be to shelter the Bank from the criticism of over-sanguine citizens unable to perceive in periods of active business the wisdom of a refusal to extend credit to the extreme limits of safety.

In addition to the funds subscribed by its shareholders the Bank would also secure funds deposited by the other banks to enable them to make use of its exchange and clearing service, and also the funds constituting the working balance of the United States Treasury. It might, too, secure a still further accession of funds, and at the same time relieve the government of a portion of its monetary burdens, if the issue of gold certificates were discontinued and the present certificates redeemed. On account of the preference of the people for paper money much of the gold thus paid out would certainly be taken to the central bank to be exchanged for its notes. This gold would largely augment the general banking reserve of the Bank since it would not be held as a special deposit against the notes.¹ At the same time the \$346,000,000 of greenbacks might also be exchanged for the notes of the Bank, the \$150,000,000 gold reserve being turned into its general reserve. As a result of these arrangements two kinds of money now in general use would disappear from circulation, the gold certificate and the United States note, and would be replaced by the notes of the central bank. The government would

¹ Much of the strength of the Bank of France is to be attributed to this preference for paper money. The stock of money in circulation has increased in France with the growth of population and business, and on account of the increase in the world's supply of gold. This gold, instead of going directly into circulation, has been largely taken to the Bank of France to be exchanged for bank notes.

cease to be responsible for any kind of paper except the silver certificates. The amount of these, however, is far less than is always required for monetary purposes outside the banks and they no longer present a serious monetary problem. They might, indeed, be taken over by the bank in exchange for its notes. The reserve of the bank would then be composed in part of silver; but in this respect it would not be unlike some very successful central banks, notably those of France and Germany: At the outset, however, it might well prove the wiser policy not to weaken the prestige of the bank in this way. By reserving for the silver certificate the one-dollar and two-dollar denominations, and by restricting the volume of bank notes of the next two denominations, sufficient use would be provided for the existing volume of silver certificates, the position of which would then be somewhat analogous to that of subsidiary coin.

The outcome of these monetary changes will be made somewhat more evident by the construction of a statement of the condition of the Bank just before opening its doors for business. Most of its liabilities can be stated with some certainty: viz. capital \$50,000,000; U. S. notes \$346,000,000; U. S. Treasury account (taking its present condition as a basis) \$160,000,000,¹ and, finally, the deposits of bankers for clearing and exchange purposes, which may be estimated at \$75,000,000. The assets of the Bank can be estimated less exactly, because of the impossibility of knowing the proportion of the different kinds of money now in circulation which would be turned into the Bank. Subscription to its capital

¹ I have not included in this statement the item of \$36,000,000 of U. S. deposits now held by the national banks. Presumably, much of this amount would be transferred to the central bank, tho perhaps not at the outset.

might reasonably be made payable in gold or gold certificates. Upon assuming responsibility for U. S. notes, the Bank would receive the \$150,000,000 gold reserve. The remaining \$196,000,000 might perhaps be taken care of by assigning a government debt to the Bank which, as in the case of the Bank of England, would be a book debt not subject to sale. This obligation need not involve any interest charge on the government. Even if interest were paid, it would be a matter of no special importance, in view of the limitation of dividend to be paid to shareholders. The Treasury balance would give the Bank \$95,000,000 in gold and \$65,000,000 in other kinds of money made up as follows: \$5,000,000 in U. S. notes, about \$30,000,000 in bank notes, and a similar amount in silver and subsidiary coin. Assuming that the deposits of the Bank would be made up of \$50,000,000 in gold and \$25,000,000 in U. S. notes; and cancelling the \$30,000,000 of U. S. notes, the statement of condition of the Bank would be as follows:—

<i>Liabilities</i>		<i>Resources</i>	
Capital	\$50,000,000	Gov't debt	\$196,000,000
U.S. notes	316,000,000	Gold	325,000,000
U.S. Treas. account	160,000,000	Silver	30,000,000
Due to other banks	75,000,000	Notes of other banks	30,000,000
	<u>\$601,000,000</u>		<u>\$601,000,000</u>

The Bank would have a gold reserve of more than 62 per cent of its demand liabilities. Its power to issue notes, however, before reaching the taxable limit would be slight, only \$29,000,000. But that would be an advantage from the point of view which has been emphasized in this article. In normal times the rediscounts made by the Bank would probably involve an increase mainly in its deposit liabilities

rather than in the volume of its notes in circulation. Restricted to dealings with other banks there is some doubt whether sufficient business would be regularly secured to enable the Bank to meet expenses and provide a moderate dividend on its shares.¹ Much might be said in favor of a government guaranty of 3 per cent on the \$50,000,000 of capital. It would be a small price to pay the Bank for taking over U. S. notes and for handling the receipts and disbursements of the government.

The extent and the rapidity with which the gold holdings of the Bank would be increased through the exchange of gold for its notes cannot be even roughly estimated. It would seem probable that many banks would prefer to hold gold or gold certificates in their reserves rather than the notes of the Bank. On the other hand, gold certificates received in payments to it would be cancelled and either gold or notes paid out according to the preference of customers. Moreover, a considerable portion of future additions to the gold supply would probably be exchanged for notes on account of the preference of the people for a paper circulating medium. This exchange of gold for notes would not increase the power of the Bank to issue untaxed notes but would greatly strengthen its reserve and consequently its ability to extend its operations and to meet any strain upon its resources.

This growth would, in part, be paralleled by that in the number and volume of business of the other banks. Even if ultimately the Bank should attract to itself the means for extending the scope of its operations, that need not be a ground for apprehension.

¹ Idle funds might be employed profitably in the purchase and holding until maturity of foreign commercial bills of exchange. There could be no opposition by the other banks on the ground of competition.

At the outset it would be most important that the Bank should not be overburdened with responsibilities and that the other banks should not rely upon it as the sole support of the credit structure. But when experience had shown that the other banks continued to maintain themselves in a condition of reasonable strength, and that the central bank could secure the use of their resources in emergencies, it might then with safety engage in operations which would have been extremely hazardous at the beginning of its activities.

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SOCIAL PRODUCTIVITY VERSUS PRIVATE ACQUISITION

SUMMARY

The genealogy of certain current doctrines traced back (1) to the distinction between productive and unproductive labor, 97. — The origins of this distinction in Mercantilism and Physiocracy, 99. — Mill's interpretation, 101. — The bearing of the materialistic and mercantilistic notion of production upon the notion of productive instruments and upon the distinction between land and capital, 102. — This distinction as reinforced by the argument from origins, 103. — This distinction subjected to the tests of competitive production for the market, 104. — Its support derived from English juristic thought and institutions, 104. — (2) The Unseen Hand, Natural Law, and Laissez-faire as separate sources of the current optimism, of the current misconceptions of productivity, and of current confusions between social and competitive analysis, 106. — These summarized, 109. — The genealogy of the Productivity Theory of Distribution, productivity being presented as social service, 110. — The concept of capital restated in harmony with the competitive, individualistic, pecuniary organization of business, 111. — Capital characterized not by technological tests or by materiality, 111. — Nor by the materiality of its product, 112. — Nor by social service, 113. — But by pecuniary return, — as, likewise, with the productivity of labor, 114. — Other dangers of error and other actual errors through the confusion of the social and the competitive points of view, 115. — The necessary reformulations of doctrine, 116. — General summary of the argument, 117. — The Productivity Theory of Distribution, as commonly held, old in all essentials, 118.

ATTEMPT will be made in the following pages to trace the derivation of certain central doctrines in current economic theory — doctrines which furnish the dominant issues in later theoretical controversies, doctrines, also, which in the opinion of the present writer converge to make up one stupendous error, or better perhaps, a great group or congeries of concurring errors. But, in any case, an adequate under-

standing of current issues will be appreciably forwarded by an examination of the derivation of the particular doctrines under consideration.

These subordinate and concurring doctrines are three in number: The first of the triad — first in importance if not in time — is the doctrine of unproductive labor and of unproductive consumption.

Barring the socialists, who still upon occasion exploit this view with propagandist fervor, it may be said that there is to-day no one to deny the productivity of the preacher or singer or actor or teacher or man servant or maid servant. If the artisan who constructs a violin is productive, so, also, is the artist who plays it. If to grow wheat or to grind it is economic production, so is baking it. If we may regard as productive the industry which furnishes the beef, so may we also the industry that cooks it; we eat the broiling on our steak as truly as we eat the steak. If a stock car is productive in transporting beeves over wide intervals of space, so likewise must be the waiter who brings the steak from the kitchen or passes it at the table. And precisely as we pay for the transportation of commodities, we pay to have ourselves transported. If a freight car is capital, so is a Pullman. One colorist with his brush fixes his fancies upon canvas; another color worker by the magic of his words paints pictures on the tablets of the mind; the fact that we pay for either shows either to be value rendering. To create matter is in truth, given to none of us; we only arrange and combine and distribute. Nor, indeed, is the very existence of matter better than a hypothesis.

All this is clear enough in these latter days, tho not yet fully accepted in all its implications. But at an earlier time the case had a different seeming.

Nor even now are we entirely quit of our confusions; ever and anon the older doctrine echoes faintly into our time.

But for the point of view of that earlier day and for the purposes of its theoretical needs, the distinction in question had some basis of meaning.

Cameralistic doctrine was the economics of kingship and sovereignty. The inquiry regarded solely the prince's welfare in the administration of his private estate. The various flocks upon the plains — two-legged as well as four-legged — were to be husbanded and, in the times and manners proper to them respectively, to be shorn, the ends proposed being simply the maximum possible revenue and the highest level of dynastic prosperity. The economist was a specialist in stewardship.

Economics is always pragmatic in spirit and in method. Thus with passing time the centre of interest inevitably shifted. With this change of interest there took place in some measure a recasting and a reformulating of economic doctrine. National interests were progressively displacing dynastic interests. Attention shifted from imperial wars and bickerings, and from kings and their trumpeting, to questions of the growth of peoples and of states, and to the extension of their power in territory, in wealth, and in influence. The point of view of mercantilism, however, remained consistently national as distinguished from individualistic and personal, and competitively national as distinguished from social or cosmopolitan. How, indeed, shall any people grow in economic power as against its neighboring enemies? By piling up wealth, by goodly accumulations of munitions and moneys and credits

against the time of conflict. And how shall any man or nation become wealthy, except by selling more than is bought, by keeping consumption under production? And how so well extend your personal economic dominion over your neighbor and over your neighbor's possessions — his desirable daughter included — as by getting him into debt to you? Or how so well render yourself strong, and at the same time your competitor nation weak, as by getting it into debt to you, or better yet, by getting its purchasing power into your own control, through cornering its medium of exchange? And how accomplish all or any of these things unless by selling your victim neighbor or nation more than you buy back? Thus conceived, with the nationalistic emphasis, the whole question became not primarily one of income, or of aggregate satisfactions and of total consumption, but of accumulation, and especially of growth in wealth under the form of foreign credits or other ready international purchasing power.

Proceeding from substantially the same point of view, the physiocratic school seemed to itself to have discovered a method better yet, — accumulation truly, but accumulation rather of population than of wealth. Artisans consumed as much wealth as they produced; the social cost of their product was as great as their product. Manufacturers were regarded as, in Dr. Franklin's phrase, "subsistence metamorphosed." Agricultural laborers also consumed all that they produced or, at all events, all that they received as wages, and seemingly must always command so small a wage as to make this a permanent fact. Whatever the product of labor and land together might be, the excess in produce over the laborers' wage and necessary subsistence must go to the

landowner as the equivalent and expression of the productiveness of the land. So with agricultural, also, as with artisan labor, the social cost canceled the social product; only the land was productive of *net product*. But even so, there was this difference between artisan labor and agricultural labor, that artisan labor did not increase the total population maintainable in the country, gave forth no subsistence product, no life material, while the product of agriculture may be regarded as population, expressed in the form of its raw material. And it seemed clear that national supremacy was rather a question of population than of accrued wealth.

It followed also that, inasmuch as the laborer received only enough to live upon anyway, there was small use, and some harm, in trying to tax him. The only man who, having a product net, a surplus, could pay was the landlord, the rent-gatherer. If the laborers paid taxes, it must be at the expense of their number. It followed from all this, then, that the program fundamental to national greatness was to foster agriculture as a life-maintainer, the sole source of increasing population, and to tax the land.

Adam Smith, coming into the national point of view as an inheritance from earlier thought, set himself deliberately to the investigation of the causes, and to the formulation of the rules, making for the increase of the opulence of nations, and found that while manufactures were productive, they were not so *in the same sense as agriculture*, while labor as mere service was not productive at all. The shadow of physiocratic reasoning was still over Adam Smith.

Not having arrived fully and consistently at the individual point of view in economic analysis, John Stuart Mill followed substantially in the footsteps of

Adam Smith. Unproductive consumption is consumption that does not furnish maintenance for productive labor. Productive labor is, in turn, that labor which affords an addition to the aggregate accumulated wealth possessions of society. Thereby he arrived at the distinction between material and immaterial. But this distinction between material and immaterial rested not at all upon considerations of utility, of importance for consumption in the aspect of service to human needs, nor finally and fundamentally upon some test of concrete reality, or of tangibility, or of materiality in any philosophical sense, but solely upon the aspect of permanency. For in a general way, that which is material and tangible is enduring; at any rate, that which is not material, which has no substantiality, is evanescent; in coming to be it ceases to be. Thus only material things can add to national wealth. And that some forms of material wealth are themselves very temporary in their existence, e. g. ice cream, leaves the line between the material and the immaterial none the less an actual line and, at the same time, a line which coincides practically with the line between the things that add to national accumulated riches and the things that do not add.

✓ All of which was excellent for its purpose, and need have occasioned no perplexity or controversy, if only Mill had not fallen into the error of following his predecessors in their bad choice of terms; for the line which he was really seeking was not that between the productive and the non-productive, or between the material and the immaterial, or between the tangible and the intangible, but merely the line between the accumulatable and the non-accumulatable. Interpreting his terms *productive* and *non-productive*

in this sense, no difficulty is presented, excepting, perhaps, with regard to the significance of the distinction, as seen from the point of view of a more modern analysis and of its theoretical needs.¹

But, either by strict logic or by analogy, other things followed. If material facts only were wealth and material wealth alone were economic product, then only material goods were capital. The economic process was conceived as strictly an industrial and a technical process. The factors of production were material factors making for tangible, material, concrete results amenable to measurement by weight and tale. Thus the different factors of production fell into classes determined by their technical relations to a strictly mechanical process conceived on large and general lines. The mechanical, concrete, industrial equipment at the disposal of human energy — also mechanically regarded — was divided into two clearly defined and comprehensive classes corresponding to the large and general (and essentially vague) distinction between agricultural and non-agricultural production, or — more accurately — to the distinction between the extractive and the non-extractive industries. Hence, in part, the distinction between land and capital.

But for the purposes of any workable classification this distinction will not serve. Not the extractive industries alone but all industries employ land, precisely as all industries make, under present conditions, use of non-land equipment. And even as a distinc-

¹ See the writer's *Value and Distribution*; page 122, note: And it should here be said that, not only in phrase, but still more in doctrine, the present article borrows liberally from the same source. The main purpose, in truth, of the present writing has been to present, as forcibly as may be possible in short compass, a few of the theoretical positions there argued for at great length and weariness.

tion of degree it will not hold. Some of the extractive industries, mining for example, are pronouncedly, even prevailingly, capital-using in their technique; and even the most simple and primitive of extractive employments make appreciable use of non-land instruments.

From the social point of view, also, *tho somewhat violating the technological test*, the distinction between land and capital was reinforced by obvious differences of origin: the genetic point of view. Some part of the material productive equipment comes by natural bounty, a gift of providence, a racial heritage rather than a racial achievement. The produced facts, — products of labor set aside for further use in production, — fitted passably well into the capital category already constructed upon technological distinctions.

It is, however, clear that, for any purposes of a competitive economy, this distinction on lines of origin leads nowhere when attempt is made to apply it. — From among all the changes of all the ages, who can assume to tell what environmental changes have been due to environmental processes as against human agencies? What part, for instance, of the fertility or the infertility of the land has been due to its treatment at the hands of man, to his fertilizings, his exhaustings, and his denudings; what part to fostering or wasting winds, to corals, to birds, to bugs, to worms, to microbes? What share of the value of the house traces back to the timber values of the natural forest, and what part to industrial processes? Even with the case of machinery, the typical form of capital, human wisdom would fall far short of distributing the final value between the original ore value as

against the labor value, the coal value, and the timber value. Nor, for any one of these various shares, would it be possible to determine how far land rents, as expressed in warehouse and transportation charges, have counted in the case. And finally, if any one could succeed in this allotment of origin-credits, either for the land or for the warehouse, is it to be supposed that, as shares in the total hire of the machine, these remunerations would forthwith, either in the collective or in the competitive reckoning, take on a new relation to the cost of the product or to its value?

But in a larger social, historical, and philosophical view the distinction remained still valid—only that it was not valid for any purposes of competitive entrepreneur activity or for any problems of market value and price or for the analysis of the competitive distributive process. It was, however, unfortunately assumed, and still is commonly assumed, that what is true for social purposes holds for the competitive analysis.

But perhaps the most important corroboration for the distinction between land and capital, and possibly the origin of the distinction, is to be sought in the jural background of English thought. The civil law of England and in a large degree the economic, political, and social organizations trace back to feudalism, a system in which land ownership was the controlling and directing fact for almost all purposes, political and economic, theoretical and practical. The line of cleavage between real property and personal property runs deep through all English jurisprudence.

It would, then, be a most interesting investigation, if only one had the necessary learning, to trace out

the manner and degree of connection between the legal distinction of realty from personalty and the economic distinction of land from capital. That the parallelism is more than merely fortuitous may be taken as beyond doubt.

It only remains, then, to inquire whether the common-law distinction between real property and personal property recommends itself as in any way essential or necessary, or can point to other than a purely historical explanation or warrant: Roman law and the derivative systems suffice for testimony to the contrary.

If the foregoing considerations are to the point, adequate explanation is presented for the classical habit of confining the field of economics to a study of the production, distribution, and consumption of wealth, wealth being taken to mean tangible material goods; for the restriction of production to the bringing about of material results; for the construction of categories of material factors based upon material items of equipment; and for the distribution of this store of equipment into material non-land equipment on the one hand as over against land equipment on the other hand.

That we, the economists of these latter days, have inherited richly and gratefully from our forebears is equally to our credit and to our good fortune. Nevertheless the best of the story is yet to tell. We have still to analyze the spiritual setting of these doctrines — their soul and heart and aspiration — before we can either estimate all that they meant to their exponents or approve of all that they have signified to us as legatees. Only so can we measure the degree of the unfealty of a few of us to the faiths of the fathers.

We need, that is to say, to note how far a genial optimism due to a reverent faith and a reverent faith derived from a genial optimism converge to reinforce and to extend and to interpret the more strictly intellectual aspects of the classical doctrine. We need to know the inspiration and the spiritual furnishing of the classical view. Filially and uncritically, therefore — as becomes the heirs of an estate — a few words must be said of the Guiding of the Unseen Hand, of Natural Law, and of *Laissez Faire*.

There are other bases of optimism, doubtless, but the readiest is religious faith. Seen in the large and in ultimate bearings, things must be going well with the world; else what can God be about? It is given to none of us to thwart the will of the Creator of all of us. Whatever we do we must perforce be working out the great program, treading the wine from His presses, milling out the foreordained grist. It can not be but that we are playing the part for which we have been assigned to the ends of the eternal process. However great then may be our ill of purpose, there can be nothing ill in the results. Whether or not there be, somewhere or ever, any other good than the good will, it is certain that there can be nothing ill but the ill will. Whatever wrong we may purpose, and however great the guilt of our bad intent, and however grievous the merited punishment, there can never anywhere be any guilt of accomplishment. This is a world where even all ill is good, since this is a world ruled by infinite goodness: "God's in his heaven."

This much granted, — and it is not much to grant for the truly religious man or for the truly religious age, — it forthwith becomes incredible that the best interests of any of us can antagonize the interests of

the others, if only it be possible to the individual to appreciate things in their ultimate meanings and their long effects. Somehow each of us meets the faith in him that, could he see things farsightedly and clearly, self-love and fellow-love would find themselves reconciled in the moral code as it daily enacts itself in the human conscience. The right of the neighbor can hardly be wrong to us. The claims of sympathy and the demands of duty not only express our obligations to our fellow beings, but sum up in highest and truest sense our own well being. Somehow the right thing must be the best thing for each of us. It cannot do our neighbor wrong; it must be best for him as well as for us. It follows, then (as, for example, Bastiat argued) that all exchange is a mutual transfer of services. All trade is good; good from the point of view of the traders immediately concerned, and good for all the rest. International trade especially must be good for both nations. Hence further corroboration of the brave and noble faith that all individual interests, rightly seen, must harmonize; any clash must be the merest seeming, or somehow real interests have been misconceived. And even when these misconceivings are most common and most extreme, the Unseen Hand will always — or almost always, or commonly, or at all events sometimes — marvelously and providentially set things right. It was odd, no doubt, in a world like that of Adam Smith's construction, that there should turn out to be any such thing as unproductive labor; and particularly was it odd that traders and middlemen should so multiply, being mostly parasitic. But at any rate both valets and traders could be trusted to become gradually fewer — a laggardly and leisurely fulfilment of the divine will, but none the less a ful-

filment. In general, surely, private gain must accord with public welfare. Consumption must take place by right of a preceding production. Private gain must trace back to social contribution. Capital must be such by furtherance of social product. Private income connotes a socially earned income. Distribution is solely and exclusively a division of a joint product among the coöperating productive factors. So runs the Great Plan.

Tenuous and unsubstantial rather than solidly theoretical, and impersonal and illusive, but none the less real and objective and effective, is this same doctrine as it presents itself under the guise and sanction of Natural Law. The Natural Law philosophy was the skeptics' way of saying substantially the same thing; it was the old faith unitarianized. Being, moreover, less naive, it was less intelligible, and thereby less open to attack. And it had the usual merit of vagueness that it might mean pretty much anything — little or much or nothing. Better than this, also, it was rational, and struck hands across the ages with Greek philosophy and with Roman jurisprudence. It sounded not a little like the Law of Nations and breathed the air of Platonic idealism. But, best of all, it recognized and proclaimed a great stream of righteous tendency and great reservoirs of compelling force making for the good. God or no God, there was — and still is — a world of law wherein truth is immortal: Thus the right is destined to ultimate triumph; and progress reigns; and things essentially improve by their own inevitable unfolding; and the soul of things is just. Evolution is thereby the last word of scientific faith, and the ameliorative trend a popular certitude.

If, indeed, all this be not easy to state, it is easy enough to feel and to know, as most economists and all good citizens do now know it and feel it. All things are coming out all right; the situation will work itself clear; the world is getting better; time will solve the perplexities and administer the remedies; things will cure themselves; destiny guides us; the long laws are with us; something will be found to replace the wasted coal; the hills will reforest themselves somehow. If God is not benevolent, trends and forces and tendencies are. Let nobody "knock." This is the day of the optimist. Whoever doubts declares his own incapacity for sane thinking.

It must, however, be admitted that the *Laissez Faire* school of thinking was something more, and possibly something better, than a mere spontaneous religious faith or a naive natural-law metaphysics. Some measure of inductive support was commendably offered this *a priori* faith, and therewith a plausible case was established. The economists of the first half of the nineteenth century were engaged in the study of societies emerging from centuries of kingship, of government by classes, of stupid and unjust legislation. It was clear enough that the progress of society lay in the breaking down of legal barriers and limitations, in the sweeping away of the privileges of caste and class, and in the development of popular institutions under the form of local and individual initiative. The time was one of growth and advance. A wealth of achievement justified the advocates of industrial liberty as theorists and honored them as prophets. The era was a series of object lessons in the blessings of untrammelled individual activities and in the dangers of over-legislation and paternalism.

The benefits of increased freedom argued for the wider abolition of regulation, and the regime of liberty came to stand as the ideal toward which civilization seemed to tend. For most cases, it was manifest that what individuals and peoples chiefly need is to be let alone; that that part of human ill is small which kings and parliaments can cure. In the full flood of hope, economists argued learnedly that the good of each is always and inevitably bound up with the good of all; that in the marvelous divine order of things, selfishness of motive works out in altruism of results; that social ill-adjustments are due to too little liberty, too much meddling, or to ill-informed estimates by the individual of his own interests. Nothing remained but to enlighten the people in their freedom. The future could not lie with restraint, but with liberty informed with knowledge.

But all this concerns the present inquiry merely as indicating the presuppositions and as sketching the background of thought explanatory of certain important positions in current economic theory. Let these be restated. In ultimate essence competition is voluntary coöperation. Capital is wealth stored up for purposes of future production and consists solely of concrete instrumental equipment. The test by which a thing is capital is the test of technological serviceability as a factor for concrete production in the industrial process. The interests of labor demand the multiplication of capital. All incomes are derived from participation in the productive process. These incomes as distributive shares out of a jointly produced product of value are received by title of social service performed. Distribution is part and parcel of the productive process, takes

place within it, and is justified by it. The point of view from which the economic life is to be studied and by which it is to be interpreted is the social point of view. Each and every gainful occupation approves itself as socially productive, else it could not normally be privately gainful.

And now it will be worth while to subject these doctrines to the test of the pitiless facts. But, at the threshold of this unwelcome task, a caution is called for. If it should have occurred to the thoughtful that the foregoing equipment of concepts and categories and doctrines is especially reminiscent of the current productivity school of distributive theory, this suggestion must be promptly dismissed. Reminiscent of the productivity school it may in some sense be — but not rightly or especially or peculiarly so; for all these are the concepts and categories and doctrines of current economics in general. They are the common property of the classical and of the modern. This equipment of terms and theories and presuppositions is the common possession of economic thought in the large — not of this school or the other, not of ancient or of modern, not of cost doctrinaires or of utility doctrinaires, but of the genus economist in general.

But to the test of the facts: the truth is that the essential nature of capital is not to be found in its significance as a category of machines and tools and appliances. True, these things are capital, but so also is ice in the ice house waiting for summer, cider in the cask aging to vinegar, wine in the vault acquiring bouquet and flavor. Not even for the wine or for the cider is James Mill's explanation — that *these also work* — a competent account of their capital

character. Still less is it adequate for the ice, since during all the time of its keeping it is falling away in quantity. But each and all of these commodities are acquiring value with passing time; they are held for increment; thus they are capital. So the merchant's stock of goods is capital — but not as a factor of production in any industrial or technological process; and, if some one should suggest that these are merely private, not social capital, the answer must be: precisely so, — capital.

Nor is the test in the materiality of the product. Freight wagons or freight cars are surely somehow to be included within the capital category; then so, also, are passenger cars and taxicabs — despite the fact that they are rendering merely the service of transporting men. But then equally so are excursion boats or pleasure boats kept for hire. Evidently the test is neither in the technological character of the process nor in the materiality of the product.

Nor is the line of distinction to be sought by reference to the wholesomeness or to the social service of the product. Peruna and Hop Bitters and ribbons and watch fobs and caviare and mince pie and corsets are all wealth: they are marketable at a price: they have value as consumption goods. Not a few of us, like a late friend of the writer, glance back over our lives to wonder why everything that we ever really liked "was either extravagant or immoral or indigestible." Economic productivity is not a matter of piety or merit or deserving, but only of commanding a price. Actors, teachers, preachers, lawyers, prostitutes, all do things that men are content to pay for. So wages may be earned by indicting libels against a rival candidate, or by setting fire to a competitor's refinery, or by sinking spices. The test of economic

productivity in a competitive society is the fact of private gain, irrespective of any ethical criteria and unconcerned with any social accountancy.

But if, with consumption goods, neither ethical nor social standards are theoretically decisive, or even relevant, for the question of value and marketability and economic productivity, so likewise are these tests equally inappropriate for the capital question. If whisky is wealth, distilleries are capital items. If Peruna is wealth, the kettle in which it is brewed must be accepted as capital. Then so is the house rented as a dive; and if the house is productive and is therefore capital, so, also, must the inmates be producers according to their kind. The test of social welfare is invalid to stamp as unproductive any form of wealth or any kind of labor. If jimmies are capital, being productive for their purpose, so also is burglary productive; if sand bags, so highway robbery. The principle decisive for gamblers' quarters and for gambling appliances holds for gambling. If the fees which the lawyer receives for pleading and winning an unjust cause are earned, so also are the daily receipts of the beggar upon the corner. Always and everywhere, in the competitive regime, the test of productivity is competitive gain. Whatever wealth serves the acquisitive end is capital. Profits are merely one form of personal pecuniary intaking from personal pecuniary activity. Lobbyists, panders, and abortionists are producers: that they are paid is the adequate proof. This is surely not to deny the fact of parasitism in society. But parasitism is not a competitive category; it is a concept irrelevant to competitive analyses and competitive doctrine. It has its place only when the facts are to be appraised in their social significance. It belongs to the *art* of economics rather than to the *science*.

That a complete acceptance of this private and acquisitive point of view is the only procedure possible, in the analysis and classification of the phenomena of a society organized upon lines of individual activity for private gain, is abundantly proved as soon as appeal is made to the facts and the processes of the actual business world. In the computation of competitive entrepreneur costs, the capital investment and the interest charge are reckoned upon a basis quite other than that of technological capital. Entrepreneur capital — capital in the guise in which the type form of modern business, the corporation, presents it — includes not merely consumption goods in stock but banking balances, counter money, funds tied up in customers' accounts and in bills receivable of many varieties, corporate stock and securities, whether held for sale or for investment, and generally all that fund of working capital, more or less unspecialized, requisite to the successful functioning of a business. The manufacturing entrepreneur or the corporation manager would find it a novel and perplexing doctrine which should restrict the capital investment to the buildings, machinery, and raw materials of the undertaking. The corporation really possesses nothing that is not capital. All things, then, that can be traded in, or valued, or rented, or capitalized, may fall within the meaning of the capital concept. In this sense of the term capital includes, *in the price aspect*, patents, copyrights, trade-marks, business connections, reputation, good-will, privilege, government favor, franchises, royalties, rights of toll and tribute, rents, annuities, mortgage rights, personal claims. And, further, it includes monopolies of no matter how various kinds and degrees, so far as they may become the subject of invested cost in

obtaining them, so far as they are bought and sold as steps in competitive-productive investment, or are vendible upon the market as capitalized dividend-paying properties. All of these are capital for our present purposes, since they get into costs in the actual competitive market production of such commodities — hats, wheat, machinery, stocks, etc. — as are actually marketed. All things which, from the entrepreneur point of view, appear as expedient expenditure for the purposes of creating either a commodity or a situation of market value are outlays of capital taking rank as costs of production. When the purchase of machinery is an advisable move in business policy, capital goes into it, as at another time into land or labor. When, in good business policy, a franchise must be had or a patent procured, capital is, in either case, so directed as to accomplish the necessary thing. When, for equally cogent business reasons, legislatures or city councils must be bought, the necessary outlays are, for cost and value purposes, precisely like expenditures for machinery or for the control of patented processes. Tramway franchises and sugar-refining tariffs, as situations business-wise obtained by the expenditure of capital, disclose in the current market values of the stock the present worth of the forecasted gains. So the expenses of stifling competition are capital outlays, invested as the costs of a monopoly to be obtained; so also the tribute paid to escape cut-throat competition is a capital cost of production.

All this should be easy of acceptance, but is in fact far from easy. Social appraisals are prone to disturb and to confuse all purely realistic descriptions and theoretical analyses of the facts of actual business.

What should be, gets mixed with what actually is. The case is as if the physician, because he ought to be sympathetic, were required to mix his hopes into his diagnoses and to write his sympathies into his prescriptions. One may condemn the poisoner's art, but this ought to argue that the chemist study poisons carefully rather than that he exclude them from his researches. Bacteriology would be of dubious service to human life if only beneficent bacteria were held worthy of attention. The zoölogist who could not see a snake would be a twin brother to the economist who can find capital only when there is social productivity, and who recognizes economic labor and economic wages only upon condition of social deserv-
ing. Economists will do well forthwith to recognize that rights of patent and royalty are capital; that rights of tribute through franchise privileges are capital; that police permits to rob passers-by after midnight are capital; that legislative authority to rob importers, both early and late, is capital; that royal patents for tax-farming the peasantry are capital; and that generally every property basis of private acquisition is by that very fact capital. Until Political Economy has achieved this much of wisdom, its doctrines can express nothing more than a pious and commendable aspiration; it will still be busy with picturing utopias or with analyzing hypotheses; on this basis it must continue to lack all touch with life, to make it itself a sheer farce — albeit coming as near to tragedy as comedy often gets.

The truth, then, appears to be that the grotesque unreality of current economic doctrine finds its explanation in the eighteenth century background of philosophy, religion, law, and ethical theory, under

which influences, and mostly determined by them, the system of economic thought first took shape. The presuppositions of English jurisprudence, and of the feudal common-law system, reinforced by certain of the doctrines of Physiocracy, worked out into a purely technological point of view and into a purely technological — and untenable — manner of regarding, of distinguishing, and of classifying the aggregate productive equipment. Presuppositions of religion, of natural law, of philosophy, and of natural-rights ethics concurred to stamp the economic process as fundamentally rational and beneficent, to obscure and even to deny the distinction between the social and the competitive, and to assume and even to assert the necessary parallelism between the private interest and the aggregate good. And the trend of economic development lent for a time strong support to this conviction. Thus the doctrine of the economic harmonies won a many-sided support. *A priori* probability was with it, and wide inductive verification was bountifully at hand. The economic process recommended itself as an automatic system of voluntary coöperation, a providentially and beautifully adjusted method of mutual service. Each distributive share appeared to be claimed by title of contribution to a product jointly and coöperatively produced. The factors in the process were conceived as technological factors and the title of each to remuneration was attested and worked out and determined by the degree of its technological contribution.

The productivity theory of distribution, that is to say, had not several decades to wait for its emergence; in essentials and in ultimate analysis it had already appeared. It remained only to amplify it. In phil-

osophical phrase, economics had only to become conscious of itself, to unfold its essential nature, to realize and to complete itself. Not that there was little to do. It still remained, for example, to work out its details and to emphasize the great truth that all saving is good — by the very fact that it must incorporate itself in social equipment. John Stuart Mill, it is true, was not quite certain of this, in view of the occasional happening that this saving could be detected flowing into government debts; but none the less was his accomplishment great in proving to the laborers that their employment and their wages were dependent upon the development of their employers' riches and upon the growth of the wage fund, — that the laborers' only hope of welfare was in having as few of themselves as possible and as many and as wealthy employers as possible. Perhaps no more beautiful and comforting harmony than this was ever disclosed. The interests of labor and capital have ever since been one — in the books.

But there is no need to carry the discussion further. The rest may well go without saying. Since the time that this social point of view got itself well established in economic thought and carried with it its equipment of concepts and terms and doctrines, all things indeed have remained well and harmonious — in the books. But only to the extent that economics has been inconsistent with itself, recurrently and sporadically falling away from the faith of the fathers, has it fallen into touch with life and with the things of business. Mostly, however, we can rejoice that the old faith still stands. Mostly we remain productivity theorists still.

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RENT AND PRICE: "ALTERNATIVE USE" AND "SCARCITY VALUE"

SUMMARY

I. The "alternative use" idea, 119. — A value or price notion, 120. — Assumes distinct land-use groups and margins, 121. — II. Its alternative-utility aspect, 121. — Not significant as a long-time factor, 122. — Limited significance as a short-time factor, 123. — Classification of land utilities, 124. — III. The alternative-supply aspect, 126. — Limitations, general and particular, 126. — Costs, 127. — Return to value view-point and *net* utility, 128. — Effect of unequal wealth distribution, 129. — IV. The relation of "alternative uses" to rent, 130. — Not causal or determinative, 130. — Some practical considerations, 131. — V. Mill's treatment of "scarcity value" and rent, 132. — Overlooks the significance of the intensive margin, 135. — Loose use of terms, 137.

THE following paper is the result of an examination of those cases in which, according to J. S. Mill, prices are in part determined by rent payments. In his *Principles*¹ Mill sums up the relation of rent to price as follows: —

"Rent is not an element in the cost of production of the commodity which yields it; except in the cases (rather conceivable than actually existing) in which it results from and represents a scarcity value. But when land capable of yielding rent in agriculture is applied to some other purpose, the rent which it would have yielded is an element in the cost of production of the commodity which it is employed to produce."

I

Mill's statement that, in case land capable of yielding a rent in agriculture is put to some other use, its rent will become an element in cost of production in the new use, — or, in other words, will

¹ Book III, ch. vi, §9.

enter into the price of the commodity it is then employed to produce, — opens up the whole question of the relation of so-called alternative uses to the theory of rent. In his statement there is a modification of the bald classical doctrine of rent as put by Ricardo, the full significance of which Mill himself probably did not realize, and which has been brought out by such writers as Jevons, Hobson,¹ and Patten. The concise statement of the limitation would be as follows: land exists of different grades; the statement that rent does not enter into price holds of necessity only for one class of product raised on one grade of land; the price of products raised on lands that have been put to the more productive of two alternative uses is in part a positive or "specific" rent.

It is desirable to examine this newer doctrine more fully and critically than has, to the writer's knowledge, yet been done. In such an examination two questions at once arise: (1) What are alternative uses and to what extent do they exist? (2) Do they give rise to "positive" or "intra-marginal" rents, — rents which are "an element of the cost of production"?

1. It must be observed at once that an alternative "use" is a price or value idea, — it assumes a price medium. It really connotes two factors, supply limitation and utility. It is desirable to separate the two, and discuss first the alternative-utility phase of the alternative-use idea.

As furnishing something of a key to the inquiry it may be suggested in advance, also, that if alterna-

¹ Economics of Distribution, p. 120: "What really invalidates the Ricardian treatment is the fact that most land in use has several alternative uses or can contribute toward several different supplies.

tive uses are to have any bearing upon the rent-price question it must be through alternative margins,¹ that is, through the existence of distinct margins for distinct land-use groups. If these do not exist, if all are reduceable to a common margin, mutually determined for the various uses, then there is no place for positive intra-marginal rents. That part of a land supply which has an alternative use can not be said to determine rent if its only claim to that distinction be such a use; for that would but throw one back upon the question, what determines the rent in that alternative use?

II

As the term "alternative use" is commonly employed it means that any unit of land which can produce wheat, corn, cotton, cattle, manufactures, has as many alternatives as products; and a typical conclusion is that "the rent of land for agricultural purposes must be counted as a part of the cost of the product of a market garden."² To the writer this statement of the case seems superficial, in that it overlooks the elementary facts that the essence of production is utility creation and that in consumption men tend to equalize the marginal utilities of things consumed.

Let perfect mobility be assumed; also, a uniformity in quality and intensity of wants. In short, assume a static state and a problem on the demand side

¹ The marginal unit is, of course, not necessarily the point of determination. This point is in the unit which will be the first to cease producing in the particular use under consideration. It may be above the marginal one if it has some effective alternative. It will be the one which has the most attractive alternative relative to its productiveness in the given use; it will be the worst unit which has the best alternative.

² Johnson, *Rent in Modern Economic Theory*, p. 86.

in normal value. Then remember that the end of production is the satisfaction of wants and desires: that what land produces may all be reduced to terms of the common denominator, utility. Then what constitutes the rent of land is the productivity of land in the satisfaction of wants, *whatever be the concrete medium.*

From this point of view the above conception of alternative use, loses significance in so far as it means alternative utility. It is not necessary to assume that all land produces wheat in order to bring about a single absolute margin. If the element of utility, want-satisfying power, inherent in all economic goods, be considered the essential underlying the form, a similar result is obtained.

So far land has been discussed as yielding general undifferentiated utility. With all disturbing and retarding conditions removed this would be sufficient. We must, however, turn to the short-time working out of these things in a dynamic society, to a problem in market value. Here we have to reflect that man's wants are — immediately — for food, for shelter, for standing room, and for pleasure-giving things; and, on the other hand, land furnishes fertility, location, mass, beauty. Thus it would seem logical to recognize these few utilities, at least, as fundamental in any analysis based on a recognition of the fact that in a dynamic society the ultimate essential works out slowly: that competition, mobility, knowledge, are not perfect; and that wants lie in different planes, so to speak, varying in their urgency and the means for their satisfaction. And on the basis of such an analysis certain land-utility uses, not immediately competitive, may be recognized, each having its own margin.

The meaning of this will become clearer if we return to Mill's case. From the statement that land capable of yielding a rent in agriculture may yield a rent when put to some other use, and that this will enter into the price of commodities resulting from the new use, it might seem but a short step to the doctrine of positive, marginal rents within purely agricultural uses. Between grazing and market gardening there is nearly as great a difference in externals as there is between market gardening and residence use. But Mill does not take this step nor draw conclusions from superficial distinctions. In addition to the general statement given above, he says:¹ "Land is used for other purposes than agriculture, especially for residence; and when so used yields a rent, determined by principles similar to those already laid down. The ground rent of a building, and the rent of a garden or park attached to it, will not be less than the rent which the same land would afford in agriculture: but it may be greater than this, to an indefinite amount. . . ." Sites desirable for their convenience, he says, have their rents determined by the ordinary laws of rent; but those of remarkable beauty are "at a scarcity value." The only case considered by him, then, in which the existence of an alternative use may allow rent to enter into the determination of price, exists when agricultural land is applied to uses other than agriculture. Beside residence sites, which he evidently deems the chief instance of the phenomenon, he mentions wharfs, docks, harbor room, water-power, "and many other privileges."

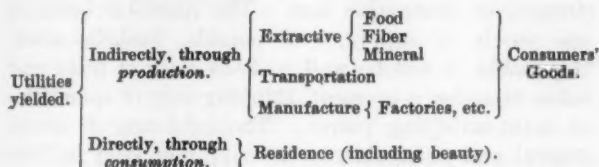
Thus Mill gives the principle of alternative use but a narrow scope as compared with the treatment

¹ Book III, ch. v, §2.

of some later writers; he does not divide lands into numerous use groups: he does not consider lands producing corn and lands producing wheat as belonging to distinct alternative uses, and having separate margins. He considers cases in which the alternative-utility use is — immediately at least — of a different order, in which land passes from the production of one utility to another fundamentally distinct. The cases he mentions represent a transfer from agriculture to a use in which desirability for residence as determined by beauty and convenience of location is the basis. This point is of no little significance; for, where units of land produce in such manner as to satisfy wants of the same order — where the consumers' goods, to the production of which land contributes, may be substituted — a problem arises which differs materially from the case that Mill considers. Residence use, harbor room, and dock space do not satisfy a man's hunger. The utilities of a building lot and of a corn field do not come to the same market. So far as market values are concerned, a logical recognition of the capability of land areas to produce different orders of utilities has some significance, — tho, as will be seen, not that assigned by Mill, Jevons, or Hobson.

Thus it may be logical to divide land into several non-competing use groups, and to distinguish as many separate margins. In one group place all lands which yield utility through extractive production, notably agricultural land. In a second group place such lands as owe their utility to their power to satisfy wants for building sites. These fundamental groups might be subdivided: agricultural lands being composed of food-producing, building-material-producing, and fiber-producing lands; build-

ing lands of (1) lands for mere residence, (2) lands valued for convenience or beauty of situation, and (3) transportation and factory lands. The rents of these non-competing groups of land may be measured from separate margins. On the basis of this analysis a logical classification of the lands of a society might be given as follows:



In the long run, lands whose utilities are yielded indirectly through production are brought into relation with lands whose utilities are yielded directly for consumption through consumers' goods in the shape of food products, clothes, and the like. But in short-time periods the utilities may be distinct.

Here a word should be added concerning terminology. Properly speaking, lands within a competitive utility group are not subject to alternative use within that group. They yield the same kind of utility, they have complementary utilities, but not in any significant sense *alternative* ones. These words stand for different ideas and it may be that confusion in their use has confounded thought.

From the economic standpoint, "alternative" has a "short-time" meaning, and should be applied when land in one group may be put to another and a distinct use in another group—as where agricultural land is used for residence. And it should be borne in mind that, economically speaking, there is no alternative use unless the net utility produced in one

use equals the net utility yielded in the other; for, unless the price of the produce in the one use at least equals that in the other, the land will not be put to a different use.

III

It is necessary now to turn to the supply-limitation element in alternative uses. The question becomes one purely of supply, — of pounds, bushels, acres. If possible, it will be well to keep clear of price and value ideas for a moment, thinking only of quantities of want-satisfying power. The existence of limits, general and particular, to the supply of land utilities is the salient thing.

In the first place, there is the general limitation, — the fact that land as a whole is limited in amount. This being granted, assume land to be of equal productivity. Under such an assumption there could be no non-competitive land groups so far as supply is concerned: rents would be equal for given areas, perfect competition being assumed. There would be but one intensive margin.

But, in fact, lands vary vastly in productivity according to situation and physical and chemical composition. There are, in the second place, then, certain particular limitations to supply. The (1) supply of lands suitable for certain products is limited, and the (2) supply obtainable from given areas of land suitable for the same product varies. That is, the supply obtainable with a given effort or investment of labor and capital varies. (Here the element of human cost must be introduced.) Accordingly there are (1) absolutely distinct groups whose supply margins will be unrelated, and (2) various margins, extensive and intensive, within these groups.

Where, by reason of the fact that the land can produce but one kind of product, it is from the supply side entirely unrelated and distinct from other land, there is no alternative use. Thus rice and corn are related as utilities satisfying food wants, but there is no direct relation between the supplies of land upon which they are produced. Such uses need no further consideration from the alternative-supply view point.

Where the supply groups are more or less closely related on the supply side, — as corn land and wheat land, or land for dwelling and factory use, — there is clearly a sort of alternative-supply use. Here the lands fall into what may be called a competitive supply group.

They may or may not be equally adaptable to the production of each of the various utilities. If they are, utility alone decides whether there are any distinct or determining alternative uses. We are thrown back upon the reasoning in our first division. But probably they are not. Then within this or that competitive supply group (*e. g.*, corn-wheat-rye land) there are various limits on supply set by costs of production on various areas, and these varying costs of production differ for different areas. One field may be able to produce more bushels of want-satisfying power in the shape of corn than of wheat with the same cost.

The supply of land for any particular use is limited, as is all land, and further by the fact that it can only be increased by taking land from some other use.

But the question is, does this fact of different relative facility of production within some potential supply group make distinct supply margins? Are the alternative-supply "uses" positive and determining or merely expressions of broader forces?

The only way to answer this question and to bring matters to some synthesis is to connect at once supply-limitation with the concept of utility already worked out. This means coming to a value or price point of view, when we can logically use the idea of *marginal* utility and of *net* returns.

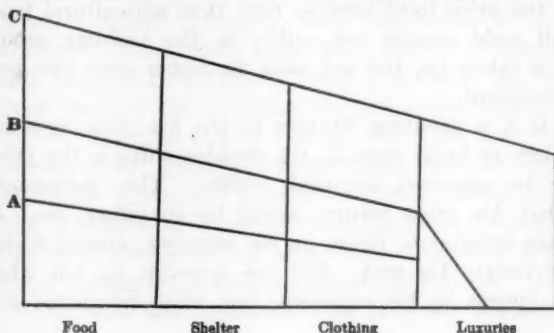
Now return for a moment to the assumption of equal competition and uniform demand and a problem in normal value. What happens then is this: in seeking to equalize the marginal utilities of goods men bring the price of each into relation with that of the other. Land which can yield utility in different concrete forms is subject to competition in the sense that it tends to be put to the use in which it yields the highest net return. The lands of the nation, of the world, even, tend to be arranged in a scale of productivity so that each acre will yield the maximum net utility. On this basis all units of land are thrown into one aggregate in that their annual values or rents are inter-related, being price-determined surplusses measured from a common no-surplus-utility margin. There would be *one* grade of land or one grade of investments upon land, so unproductive of utility that it could only satisfy the one who works and the one who waits. This land might be producing or yielding utility in the form of wheat, cotton, cranberries, or motor garages. The essential thing is that it produces no net or surplus utilities.

Here, again, the common notion of alternative use appears superficial. If rent "for agricultural purposes" is to be considered intra-marginal and positive, instead of going on to the margin from which it itself is measured to the no-rent margin for all land, it must be because the utilities yielded

by these lands are evaluated in different markets; otherwise, as price-determined surplusses, there would be a common margin. But, under the above assumption, the latter is the case.

Now if, following the previous procedure, we pass to market values, short-time conditions, and admit variations in marginal utilities and demand, the same non-competitive utility use groups appear. But we are in a position to make at least one addition as a result of bringing in supply-limiting considerations.

The utility groups distinguished above may be thought of as forming a series of vertical cleavages offering more or less obstacle to a free inter-relation of utilities and margins. Now the supply-limitation factor makes possible and necessary a grouping of wants and utilities in relation to limited supply which cuts across these vertical groups with a horizontal cleavage. For, passing from the assumption that wants are similar in quantity and quality, we note that in fact wealth is unequally distributed, which makes unequal purchasing power or "effective demand." A rough attempt to suggest the result is indicated in the following diagram. Let



A be the consumption of the poorer classes, B of the middle classes, C of the wealthy. They form market layers or strata which do not coincide.

So far as the demand for Fifth Avenue residence utility, diamond mines, game preserves, manufacturing sites for silks and luxuries of various kinds is concerned, the poor may be eliminated. Here are distinct price markets and margins.

IV

Such being the nature and occurrence of "alternative uses," does the rent of agricultural land, for example, become an "element in the cost of production of the commodities which it is employed to produce" in another use? Do alternative uses which are truly such give rise to positive, intra-marginal rents?

If by becoming an element is meant a causal or determining one, the answer is no. The price which expresses the utility yielded by building land, and from which its rent is drawn, is fixed on building land and measured from that which yields no rent. If the price fixed here so rises that agricultural land will yield greater net utility in the building group it is taken up, but *not until the higher price has been determined.*

If A is debating whether to put his lot to growing celery or build upon it, the decisive thing is the price to be expected for each utility. This determines what his gross return would be in either use. It then remains to figure on his expenses, among which he counts his rent. But the question is, not what A figures in his expenses, but *what determines this*

rent and what is its relation to the price which A has counted upon? the price which the consumer will pay? This is the more fundamental question.

The true significance of the non-competing use groups just distinguished is this: when agricultural land, for instance, goes to building use through price change it has a potential alternative use, whose effectiveness depends upon prices determined in another use market which has but an indirect connection with the former. As a result of this fact this land may pass from one use to the other. It *must*, economically speaking, whenever its net or surplus utility is greater in the other use. It then has no alternative. In the transition it affects the supply of residence or building utility, and so, indirectly, the price and the margin of such utility. Thus marginal utilities are equalized.

To sum up, from the viewpoint of marginal utility the doctrine of so-called alternative use is of limited significance in the theory of rent. It applies only in the case of lands having utilities in groups of a different order dynamically, that is, non-competitive use groups, and only operates when and where the surplus utility approaches equality in two such use groups, which approach finds expression in price changes. Land may then pass over—it must—and its rent be measured from a different and distinct margin. In so doing it affects the supply of utility yielded in the new group, and thus, indirectly, through the forces of supply and demand which determine price and margin and rent, affects price. The existence of separate margins in non-competitive land uses does not mean that land rent is the less a permanent price-determined differential.

Some practical considerations are the following:

(1) But a very small part of all the land used in agriculture has an alternative use for residence, or other purposes. (2) Once transferred from the agricultural to the residence group, land becomes so specialized as not to pass back readily, and prices and rents may fall considerably below the return to be got in agriculture before it will be devoted to farming. (3) Land frequently varies in quality within a small area, and marginal land will be found on many farms and ranches, which in turn are scattered over the country, thus, obviously, rendering practically impossible the operation of alternative uses.

So much for Mill's treatment of alternative use as a factor which causes rent to enter into prices. He makes an important exception to the sweeping statement that rent can never affect price, but does not give a very extensive application to it. We conclude that even in the cases given rent does not determine or fix price.

V

But it will be remembered that Mill makes another possible exception. He says that in certain cases, "rather conceivable than actually existing," rent which represents a scarcity value may become an element in the cost of production of the commodity which yields it.

In order to do justice to Mill it is here necessary to determine exactly what he means. Does he mean that, as Marshall points out, the extension of the cultivation of certain crops may cause a rise in the rent of land used for certain other crops to which it might have been applied? By no means. He

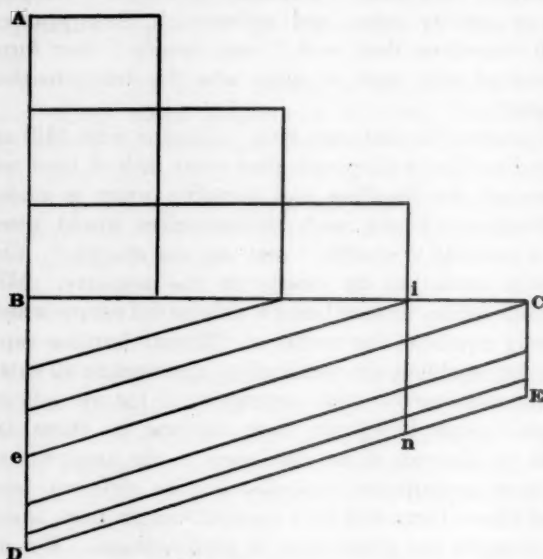
gives three illustrations of what he means: (1) In the case of mines he states that the worst mine may itself yield a rent¹ because of a sudden increase in demand. (2) In the case of fisheries, if, in the face of an increasing demand, there are no more fisheries available, "the value, doubtless, may rise to a scarcity rate, and the worst fisheries in use may then yield a considerable rent." (3) In the case of a country so fully peopled that all the lands are under cultivation while there can be no importation from other countries, land and its produce will rise to a monopoly or scarcity price, and under such circumstances Mill conceives that rent "very largely" may form a part of cost (and so enter into the determination of price).

Consider the last case first. Imagine with Mill an island so filled with people that every inch of land not necessary for dwelling and standing room is under cultivation. Under such circumstances would there be a positive, "specific" rent at the margin? The answer seems to be clearly in the negative. Mill himself defines rent as being a differential return which merely equalizes the profits of different farming capitals, by enabling the landlord to appropriate all extra gains occasioned by the superiority of natural advantages. Such being the case, as long as there are different degrees of profitableness in the employment of this agricultural capital—due to different land qualities—there will be a no-rent margin from which to measure the superiority of profitableness. We are speaking here of the entire quantity of available land considered in all its uses. In this connection a diagram may be presented with advantage.

¹ Book III, ch. v, §2.

² Book III, ch. v, §2.

Let B C in the diagram represent the amount of land in our island. It is successively taken into cultivation, until the last (or worst, rather) unit is reached, as to which unit all other units will yield a surplus. We are not for the moment considering the intensive margin, and such being the case, the last unit iC, when taken under cultivation will yield nothing over the cost of production, but the aggregate rent will be ABC. Thus far there has been no rent at the margin.



Now suppose, with Mill, that the population continues to increase and the price of food to rise. Obviously a more intensive cultivation must be resorted to. The result is the quantity, BeC. Fur-

ther increases in the demand result in a production of BDC, and the last unit, iC, produces inC. But is this a price-determining surplus? So Mill states.

It seems that Mill is in error. He is right in holding that the marginal unit of land (iC) may, from the extensive standpoint, yield a rent; but he is wrong in inferring that this rent enters into price. The rent arising on the poorest land in cultivation is in its turn simply a differential return to a more profitable investment of labor and capital as compared with the least profitable application which the increasing demand has made necessary.

We may speak of two margins: the extensive and the intensive margins.¹ BC represents the former; DE, the latter. Mill seems to think that the product arising below the extensive margin, i. e., BCD, is a cost and enters into the fixation of prices, or at least that is the logical outcome of his statement that the rent on the unit that was the extensive margin will enter into price. But the fallacy of the position is apparent. With the growth of population on the island we are merely driven from one margin to another, — from a vertical extensive margin to a horizontal intensive margin, — and this is true not only for the land as a whole, but for that part of it (iC) that was on the extensive margin.

The two other cases in which Mill leaves the inference that on account of scarcity positive price-entering rents may exist at the margin, may be criticised in a similar manner. If the rise in price is temporary, it results in what may best be called

¹ See Prof. Hollander's article on "The Concept of Marginal Rent" published in this Journal, January, 1895.

pure profits; if it lasts, there is a new and lower margin. In any case, the rise is price-determined.

In his *Economics of Distribution* Hobson supposes¹ a case like Mill's and concludes that "the worst land in use may or must pay an actual rent. This will not be a differential rent, but a forced or scarcity rent." This statement is unsound for the same reason which invalidates Mill's reasoning, and Hobson's whole argument is vitiated by a false separatism in not considering together the extensive and the intensive margins. He is inconsistent, too, in that he seems to forget his own insistence on "land use" rather than land acres as a basis of payment for land. While it is true that a rent may arise on the poorest unit of land area, there is a no-rent land-use. Here lies the significance of the intensive margin.

A somewhat different phase of the same fallacy is apparent in a recent article published in these columns. The writer says, "Where monopoly power of any kind exists, absolute intensive marginal rents will appear. These rents will enter price as do wages and interest. . . ."² The reasoning seems to be based on the idea that a "normal flow" of labor and capital is obstructed thus causing an intensive margin "which is actually higher than that of land employed in other enterprises." But does the fact of a higher intensive margin — assuming it to be true — mean a positive rent at that margin? — one which enters price? Not if the reasoning of this paper is sound. Nor does the article referred to show how a higher intensive margin

¹ p. 120.

² *Quarterly Journal of Economics*, August, 1906, p. 606. *Relation of Marginal Rents to Price*, by F. T. Carlton.

causes "absolute marginal rents." It might as well be argued that because a poor farmer may not work his land with sufficient capital, — and whose intensive margin is consequently higher than his better equipped neighbor's, — intra-marginal rent appears upon his land, and enters the price of his produce.

It is probable that Mill fell into error partly through a loose use of terms. His language is inconsistent. He first defines rent as a surplus over cost of production, and states that it is the result of the sale of commodities whose value "is not, correctly speaking, a scarcity value." How then can he consistently say, "A commodity may . . . yield a rent even under the most disadvantageous circumstances of its production; . . . when it is . . . selling at a scarcity value?"¹

Again, it will be remembered that Mill used the phrase "cost of production" rather than the word "price," saying that rent is an element in the cost of production of the commodity which yields it in certain cases² where it represents a scarcity value. But how can a return which is a surplus above the cost of production enter into the determination of that cost? It might be possible at least to argue the statement that such a surplus entered into "*price*," but that it should largely determine that quantity to which it is a surplus is inconceivable.

It would seem that Mill has in mind what are really two different classes of surplus, both of which he calls rent; but one of which is profits. On the one hand he defines rent as a differential which is not a result of scarcity value, but of the "circumstances

¹ See Book III, ch. v, §§2, and 4.

² Book III, ch. vi, §9.

of production." On the other hand he says a rent may result at the margin from an increase in demand relative to the supply, — *i. e.*, from scarcity. These ideas are in contradiction, and the latter kind of "rent," so-called, is really pure profits.

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STANDARDIZING THE WAGES OF RAILROAD TRAINMEN

SUMMARY

Increase of wages planned by trainmen in 1907, but not pressed because of the panic, 140.—New movement in 1909, 141.—The first attack came on the Baltimore & Ohio. Arbitration and award under the Erdman Act, 144. — Arbitration on the New York Central, and settlement on the same basis on other lines, 148. — Effects of "standardization"; inequalities remain, and are even accentuated, 151. — Connection between increase of wages and advance of freight rates; the trainmen exert pressure for higher rates, 157.

IN the recent hearings on the proposed advances in freight rates, the railroads laid stress on the increases in wages of employees. Abundant evidence was introduced to show how this one item in the aggregate had increased operating expenses, but little information was offered to show the results in specific cases. The subject is of sufficient importance to justify the recital of some such detail, to trace the inception and partial success of the efforts of the employees' organizations to "standardize" rates of pay, to point out instances where standardization has defeated its object by creating new discrimination, and to note the effect which the arbitration proceedings and standardization have had and may have on the relations between the railroads and their employees.

For the purposes of this article, railroad trainmen will include conductors, train baggagemen, brakemen, flagmen, and yard switchmen. They are strongly organized, the Order of Railway Conductors con-

trolling road conductors, and the Brotherhood of Railroad Trainmen embracing train baggagemen, brakemen, flagmen, yard conductors, and yard brakemen. The engine crews belong either to the Brotherhood of Locomotive Engineers or the Brotherhood of Locomotive Firemen and Enginemen. All of the brotherhoods work under the "open shop" policy and their administration, compared with that of other labor unions, has been marked by conservatism and moderation. The engineers and the firemen negotiate and maintain their working agreements separately, but the conductors and trainmen usually appoint a joint committee to represent the two orders in conferences with the management on rates of pay and working conditions.

The unit of service in the operation of trains is the train mile, and the compensation of men in train service is regulated by the rate per mile. Formerly, per diem or trip rates were the rule, but the mileage basis (advocated by the employees' organizations) is now general, except in switching service, where the rate per hour remains.

During the latter part of 1907, with traffic unprecedented in volume and the railroads not only taxed to the utmost capacity of their facilities but also unable to obtain experienced men, the organizations planned to demand an advanced wage scale with the beginning of the new year (1908). But before negotiations were fairly begun, the effect of the financial depression of 1908 was apparent, and the employees saw the futility of adhering to their program. Instead, their strength was successfully directed toward overcoming the efforts of some of the railroads to reduce wages. The Boston & Maine, for instance, asked its men to accept a 5 per cent cut for a few months.

The men were not unwilling thus to help the company through the crisis, but their leaders would not permit them to accept a reduction, even tho temporary, fearing no doubt that the precedent would be followed generally by all the railroads. A proposal to reduce wages on one of the railroads in the south was frustrated by President Roosevelt, who threatened to institute a Federal inquiry if an attempt were made to diminish the compensation of employees. It was evident that continued efforts to reduce wages would result in conflict with employees; it was plain also that if such a conflict occurred, the railroads would have the active opposition of the President. Under the circumstances, wages were not reduced, but forces were cut to the quick, and a large part of the program for construction or improvement of facilities abandoned. From the railroad viewpoint, the one saving feature in the situation was the opportunity to clear the service of some of the undesirable men who had been employed in 1907, when men better fitted for railroad work were not available.

In October, 1909, representatives of the conductors and trainmen of all the roads east of Chicago and north of the Chesapeake & Ohio Railroad met in Boston and formed the Eastern Association of General Committees. At this meeting, a standard wage scale, based on the western rates, was adopted. The roads radiating northward, westward, and southward from Chicago have been obliged to pay higher rates than in the east, and the brotherhood officers have been trying for years to bring the eastern roads to the Chicago standard. After the new basis had been duly passed upon and approved individually by the men through the local lodges of the organizations, the managing officers of all the eastern roads, were,

on Monday, January 3, 1910, simultaneously served with a formal demand for the new wage schedule. Answer was requested on or before January 20th, with the suggestion that the railroads facilitate negotiations by dealing jointly with the organization leaders.

There was difference of opinion among the railroad officers as to how the concerted action of the organizations should be met. In the west, a precedent had already been established by the Chicago General Managers' Association in dealing collectively with organization leaders and committees of workmen, and the suggestion was offered that the machinery of the General Managers' Association of New York be utilized in coping with the present emergency. This method would have facilitated settlement and enabled the railroads to show a solid front in meeting demands which were regarded by them as unreasonable. In the light of subsequent events it is now evident that concerted action would have been advantageous to the railroads. But the plan did not have unanimous support. It was decided, eventually, that each road should meet its own employees independently, decline the wage scale as presented and make the best compromise possible. Prominent railroad managers had publicly stated that the high cost of living justified a reasonable increase in wages. In meeting the committees the officials conceded freely that a revision of the wage schedule should be made to meet new conditions. There was no disagreement on the main question; the difference of opinion was as to the *extent* of the increases.

When the managers and the committees met to discuss the proposition it was evident that the committees in themselves had no authority to deviate

from the scale of wages as presented. It was plain that the organizations were determined to fight. The local committeemen stated frankly that under instructions from their grand officers nothing short of the whole schedule could be accepted.

Very little was accomplished in the preliminary skirmish. Both sides stood firm while the organization leaders planned the line of attack. Their first problem, the selection of the road on which to begin operations, was an important one, and at the outset it seemed that the choice would lie between the Pennsylvania, Baltimore & Ohio, Lackawanna, and New York Central. The Pennsylvania had always paid the highest rates, but the employees were not as strongly organized as on other roads and, moreover, this road had been conspicuously successful in preventing labor union encroachment in matters of management. The Lackawanna offered an attractive field on account of its financial strength, the Central was strongly organized. The Baltimore & Ohio had the combination of wage rates nearly as high as the Pennsylvania, and much stronger labor organization. Finally, it was decided that the first test should be made on the Baltimore & Ohio, and early in February the management of that road found arrayed against it the full strength of the Order of Railway Conductors and Brotherhood of Railroad Trainmen, with the other organizations interested spectators, prepared to claim their share of the spoils.

President Willard of the Baltimore & Ohio had just assumed office, and when affairs reached a critical state he personally conducted the negotiations with the organization leaders. Efforts to compromise were fruitless. A strike vote was taken, and a conflict seemed inevitable. Arbitration was offered but de-

clined by the men. President Willard then suggested mediation, and altho this was not agreeable to the labor leaders they finally concurred in the request of the railroad that Chairman Knapp, of the Interstate Commerce Commission, and Commissioner Neill, of the Bureau of Labor, adjust the differences under authority of the Erdman Act. After a series of hearings, an award was given, which, considering that the Baltimore & Ohio (with one exception) already had the highest rates, was a distinct victory for the men. The following table will show the result in a few typical instances:—

Wage Rate in Cents per Mile¹

Class of Service	Old Rates	Rates Demanded	New Award	Per Cent Increase
Through Passenger Conductors	2.60	2.75	2.68	3.1%
Through Freight Conductors	3.465	3.80	3.63	4.8%
Through Passenger Brakemen	1.33	1.65	1.50	12.8%
Through Freight Brakemen	2.31	2.53	2.42	4.8%

While the Baltimore & Ohio negotiations were in progress, the relations between the New York, New Haven & Hartford and its trainmen had been strained almost to the breaking point. After protracted conferences and the company's final refusal to grant the rates called for by the Eastern Association schedule, a strike vote was taken and the leaders were empowered to go to any extreme to force the issue. About this time, the Baltimore & Ohio award was handed down and a compromise was effected under which the same basis of rates was applied to the New Haven system. The comparative results, in a few typical cases, are tabulated:—

¹ Passenger crews average 155 miles per working day; freight crews, 100 miles.

Wage Rates per Mile or per Day

Class of Service	Old Rates	Rates Demanded	New Basis	Per Cent. Increase
Through pass'r conductor	2.15c.	2.75c.	2.68c.	24.7%
Local " "	\$3.60	\$4.25	\$4.20	16.7%
Through freight "	3.35c.	3.80c.	3.63c.	8.3%
Through pass'r brakeman	1.25c.	1.65c.	1.50c.	20.0%
Local " "	\$2.20	\$2.55	\$2.50	13.6%
Through freight "	2.35c.	2.53c.	2.42c.	3.0%

Under the old rates, a conductor running a through passenger train from Boston to New York, on duty from five and one half to six and one half hours, was paid \$5.00. Now he receives \$6.22, an increase of 25 per cent. His compensation averages \$1.00 per hour. The brakemen on the same train formerly were paid \$2.90; now they receive \$3.48, an increase of 20 per cent. Their compensation averages more than 60 per cent per hour, their work and responsibility are light, and in many cases their experience in railroad service does not cover more than two or three years.

Following closely on the New Haven settlement, negotiations were concluded on the same basis with the Boston & Maine road. This had the same passenger wage rates as the New Haven with lower freight rates. The Boston & Maine freight men, therefore, received a relatively greater increase than that shown in the foregoing comparative table.

While the program of standardization was progressing in New England, the committees on the New York Central were contesting for higher pay. First, they demanded the Eastern Association standard rates, but when the Baltimore & Ohio basis was applied

to the New Haven and Maine systems, the Central committees withdrew the original demands and insisted on the Baltimore schedule. The New York Central held, with good reason, that the rates awarded on the Baltimore & Ohio to meet the physical and traffic conditions obtaining on the mountainous divisions of that road could not fairly be applied to the New York Central — a level, four-track road, fully block signalled, running frequent express passenger and fast freight trains with very few stops. The Baltimore & Ohio mileage rate, made sufficiently high to enable its trainmen to earn fair wages, would give unreasonably high wages on the New York Central, with its more favorable operating conditions. For instance, a passenger conductor, then paid \$144 per month, running between New York and Buffalo, 439 miles, making 18 one-way trips per month, would receive \$212 per month on the Baltimore basis, an increase of 48 per cent.

In other respects, the Baltimore & Ohio basis was held by the New York Central management to be inapplicable to its conditions, and therefore could not be granted. The situation became tense and strike talk was prevalent. As a result of an individual poll of the members, the leaders announced an overwhelming majority in favor of extreme measures to gain their point.

Meanwhile, the company had offered a compromise wage scale which carried with it substantial increases. This being rejected, President Brown offered to arbitrate, but the organizations refused to jeopardize the advantages already gained on the Baltimore & Ohio, and the other roads which had adopted that basis. They would consider nothing short of that schedule. The railroad, realizing the serious results

of a strike in its effect upon public convenience and sentiment, suggested first that the aid of the Erdman Act be invoked so that the mediation committee might award a new wage basis more applicable to the New York Central. The brotherhood leaders would not join in the request. The company then suggested that the subject be referred to the up-State Public Service Commission. This, too, was declined by the men. As another alternative, the company suggested that the presidents of the Chambers of Commerce of the important cities along the lines of the New York Central be asked to act as an arbitration committee. This, however, with the two previous arbitration plans, was rejected, and, finally, President Brown proposed the selection of a committee consisting of Mr. E. E. Clark, of the Interstate Commerce Commission, and Mr. P. H. Morrissey, President of the American Railroad Employees' and Investors' Association. Mr. Clark, for many years, was Grand Chief Conductor of the Order of Railroad Conductors, a position which he resigned when appointed to the Interstate Commerce Commission. Mr. Morrissey, similarly, had a long experience as a railroad labor leader and for several years prior to the acceptance of his present position, was Grand Master of the Brotherhood of Railroad Trainmen. Both were skilled in the principle and practice of wage negotiation, and, since the New York Central had sufficient confidence in their fairness to leave the adjudication of the whole subject to them, the committees could hardly afford to decline the proposal. Mr. Clark and Mr. Morrissey both accepted and no time was lost in entering upon the task.

In the meantime affairs on the Lackawanna Railroad had reached a critical point. The company had

refused absolutely to concede the Baltimore schedule, offering instead a flat increase of 6 per cent. On their part, the men would not recede from their ultimatum: Baltimore rates or a strike. The seriousness of the situation may be judged from the fact that a strike was actually ordered, and the order withdrawn but an hour or two before the time set, when an agreement was reached to accept the results of the New York Central award. A few days later, similar action was taken on the Delaware & Hudson where the committees had been in session with the management unsuccessfully endeavoring to obtain the Baltimore basis.

Hence, in undertaking to arbitrate, Mr. Clark and Mr. Morrissey knew that the scope of their award would include not only the New York Central, but two other railroads, serving different sections (notably the anthracite region) and having widely differing physical and traffic characteristics. It was agreed, however, that the evidence and argument should be confined to conditions on the Central road, and altho the Lackawanna and Delaware & Hudson, were to abide by the terms of the decision for the New York Central, and the Lackawanna was represented at the hearings, they were not permitted to offer evidence nor present arguments on their local conditions.

The agreement defined the scope of arbitration as between the rates of pay then in effect and the rates demanded by the Eastern Association standard. It was a foregone conclusion that the new award would follow closely along the lines of the Baltimore award, and in this neither side was disappointed. The only question in doubt was the number and extent of the exceptions to suit New York Central local conditions. In local passenger, slow freight and yards, the award

was identical with the Baltimore & Ohio, but in through passenger service the company gained an important advantage in the recognition of the fairness of a lower mileage rate on long runs between New York and Buffalo. Instead of the standard rate of 2.68c. per mile, the award called for 2.4c.; and in certain cases it specified that on shorter runs a rate of 2.5c. would obtain until next year, when the standard rate would become effective. A similar concession was made in the fast freight runs. Instead of the standard rate of 3.63c. per mile applying at once, a rate of 3.4c. was made to apply until January 1, 1911. A comparison of the old and new will illustrate the differences:—

Wage Rates per Mile or per Day

Class of Service	Old N.Y.C. Rates	Eastern Ass'n Rates	New B.&O. Rates	New N.Y.C. Rates	Per Cent Increase over old basis
CONDUCTORS:					
Through Passenger	1.756c.	2.75c.	2.68c. ¹	2.40c.	36.7%
Suburban Passenger	\$3.58	\$4.25	\$4.20	\$4.20	17.3%
Through Freight	3.00c.	3.80c.	3.63c.	3.63c.	21.0c.
Local Freight	3.55c.	4.05c.	3.975c.	3.975c.	12.0%
Switching, day	\$3.30	\$3.80	\$3.70	\$3.70	12.1%
Switching, night	\$3.50	\$4.00	\$3.90	\$3.90	11.4%

Under the new basis, to take the illustration already used, a conductor making 18 one-way trips per month between New York and Buffalo, is paid \$190, an increase of \$46 per month or 32 per cent.

The award was dated May 4th, and the rates were made retroactive to April 1st. In making them effective, the Lackawanna attempted to apply to its through

¹ Applies only to through runs between New York and Buffalo; other through runs of more than 155 miles per day take the B. & O. rate of 2.68c. per mile.

runs the exception provided for the Central in the case of its New York-Buffalo crews, and thereby renewed the hostility of the organizations. They refused to permit the exception on the Lackawanna, and on appeal to the arbitration board they were sustained. A passenger conductor running between Hoboken and Binghamton, 206 miles, now receives \$5.62 for the trip of five and one half to six and one half hours; formerly he was paid \$4.02. The increase per day amounts to \$1.50 or 37.2 per cent.

A few days after the publication of the New York Central award, its terms were adopted substantially in effecting settlements between the managements and employees of the New York Central Lines west of Buffalo, including the Lake Shore, Michigan Central, and Big Four.

Thus the wage basis set by the mediators under the Erdman Act for the Baltimore & Ohio established a new high level which was at once adopted *in toto* by the two principal railroads of New England (now under one management). It has been shown also that the attempt of the Central, by further arbitration, to get away from the Baltimore award, was successful only in one important respect; and that, under the guise of a new award, the Baltimore schedule was forced upon the Lackawanna and Delaware & Hudson, and finally upon the Central System Lines west of Buffalo.

There remained two important roads in eastern territory on which settlements had not been effected,—the Pennsylvania and the Erie. The latter made an earnest appeal for immunity from the high wage rates, pleading financial inability to pay them. But the insistent cry for standardization would not be stilled by statistics showing the company's indigence. An

exception for the Erie would have made a troublesome precedent for the labor leaders and the road was unsuccessful in its plea for a favorable differential. The leaders of the organizations did agree, however, as a concession, to advance the date on which the standard rates should become effective, and thus permit the Erie to pay somewhat lower rates until September, 1911.

On the Pennsylvania Railroad, the differences assumed a serious aspect. In some respects, working conditions had been more favorable than on neighboring lines, and it had so long been the policy of the road to pay the highest rates in its territory, that the employees came to regard this distinction as a right rather than a favor. Therefore, at the outset, the men were frank in expressing their expectation that the advantage so long enjoyed would be continued. In other words, the Pennsylvania was expected to pay higher rates than the Baltimore & Ohio and the other roads which had adopted its basis. It is doubtful whether the employees individually were in sympathy with their leaders in their attitude on this particular point. They did vote individually to support their organization officers if a strike was considered advisable, but before such an extreme measure became necessary, an agreement was reached under which the New York Central award would apply, except where Pennsylvania rates were then higher, in which case the existing rates would not be reduced. The settlement of this difficulty practically completed the work of standardization in the eastern territory.

Having thus traced the history of the standardization movement, attention will now be directed to some of its influences. Its underlying principle is to insure that a workman on one division will receive as much

for his skill and services as any other workman performing similar service, whether it be in the same locality, or on another division or road. The trend of standardization is always upward, never downward, the low level men being lifted to the higher plane. The weakness of the recent movement lies in the fact that its scope included only the *rates* of pay. No account was taken of differences in physical and traffic conditions and little regard for differences in localities. The rate per mile is the same, whether it be made on a single track, mountainous branch line or on a level, four-track road, where it is possible to run 100 miles in very much less time than on a single track. Again, the rate per day in suburban or short-run passenger service is the same whether the man makes several round trips which keep him on duty most of the time, or when very small mileage is made and the man is off duty the greater part of the time. For example, the train crews on the short branch lines have always been paid less than the men in main line suburban service. Branch line service is not so exacting; there is less responsibility, particularly on short branches with but one engine and crew. The hours are more regular and usually there are long lay-over periods between trips in which the crew is not required to do any work. It is possible, in most cases, for the men to take all their meals at home and to live a regular home life, particularly when employed near localities where rents and other living expenses are low. These advantages have been sufficient to make branch runs attractive, even at lower wages. On one of the roads a branch line conductor, prior to the recent changes was paid \$3.25 per day; a conductor on the main line in suburban service was paid \$3.84. The arbitration award has placed them on a parity and both receive

\$4.20 per day. The main line man, performing more work and harder work for his \$4.20 than the man on the branch, is paid the same sum.

Another instance of inequality is in the relation between road freight rates and yard switching rates. A freight train brakeman receives \$2.42 for 100 miles or less if made in 10 hours or less. His runs are usually so arranged that he makes a trip out of his home terminal one day and returns the next day, thus necessitating his taking rest at the opposite terminal, where he must rent a room or otherwise arrange for a resting place and meals, with the consequent expense. In slow freight service there is no regularity to his hours—the crews are in a “belt” and are run “first in, first out” according to the demands of the service. He is therefore unable to have regular home life or to make social engagements. In contrast with these working conditions, the yard brakeman or switchman has regular hours. If he lives near the yard he can have all his meals at home, has no road expenses, can sustain normal home life and work under conditions which are more attractive than road freight work. Yet he receives \$3.40 for 10 hours of day service, and \$3.60 for the same number of hours at night, an average of \$1.08 more per day than the road brakeman. To be sure, the work of the switchman is hard and dangerous; a large proportion of injuries to employees occurs in yard service. But road freight work is also hazardous, particularly on mountain grades where the brakemen must ride out on top of the train. The difference in risk and work in yard service, whatever it may be, is nearly offset by work which entails less responsibility and regularity of hours which permits a more normal home life. Undoubtedly yard brakemen should get slightly higher wages, but an

increase of 45 per cent over the road rate is hardly reasonable.

A freight conductor is paid \$3.63 for 100 miles or 10 hours. A freight brakeman's rate is \$2.42, or 67 per cent of the conductor's rate. In yard service, the day conductor is paid \$3.70 and the day brakeman \$3.40 or 92 per cent of the conductor's wages. The brakeman in yard service is paid 45 per cent more than the same man in road service; the yard conductor has only 4.7 per cent more than the freight conductor. The road brakeman receives only 67 per cent of the conductor's rate; in yard service the brakeman's pay is 92 per cent of the conductor's wage. The differences in work and hazard require some distinction in pay but none so great. Again: The pay of a yard engineer on one of the New England roads before the recent increases was \$3.84 per day; the night yard brakeman's was paid \$2.50, or 65 per cent of the engineer's rate. Now the engineer is paid \$4.11 and the night yard brakeman \$3.60 or 88 per cent of the engineer's wages. The discrimination lies in the fact that the engineer's pay was increased but 7 per cent, while the brakeman, through the process of "standardization," was awarded an increase of 44 per cent.

There has heretofore been some equality between the rates paid to the firemen and brakemen in yard service. Now the yard brakeman receives \$1.25 per day more than the fireman. The negotiations between the companies and the engineers and firemen were completed or were well under way before the Baltimore & Ohio award was handed down and was forced upon the other roads. Consequently, the disturbance of ratios of long standing has caused some disaffection on the part of the engine crews, who acted independently and were not a part of the standardization

program. They have no fault to find with their own rates of pay, but feel that the conductors and trainmen are receiving more than their fair share of the wage increases.

The question may be raised as to how the men themselves regard the inequalities between road and yard service. A satisfactory reason for their apparent indifference does not suggest itself unless it is that the greater fascination of train service makes up for the smaller wages. The romantic features of life on the road appeal particularly to the "green" men, and if they elect road service when they begin, they must stay in road service if they would retain their seniority rights. Probably, too, the younger men do not appreciate as fully as the experienced and married men, the advantages of regular hours and home life.

It has already been noted that an actual discrimination between men of the same class results from the abolition of the different mileage rates for divisions of different physical and traffic characteristics. The Baltimore & Ohio award of 3.63c. for conductors and 2.42c. for brakemen has been applied uniformly in freight service by all railroads in the eastern territory, where formerly the rate was scaled to meet local conditions and insure reasonable wages. A typical case on the Lackawanna system will illustrate the point. When first the mileage basis for paying train crews was adopted, the Buffalo division freight men, operating over a practically level road, were paid a slightly lower rate per mile than the freight men on the Scranton division, which abounded in grades and curves. By reason of physical advantages, the Buffalo division men made their mileage in less time, made it easier, and earned more money per month

than the Scranton division crews, notwithstanding the higher mileage rate on the mountainous division. The new basis has now levelled this distinction between the two divisions, to the disadvantage of the Scranton division. The Buffalo men will make no complaint but the Scranton men will surely feel aggrieved because of the loss of the premium of long standing. A Buffalo conductor now earns from 70 to 80 cents per hour; the Scranton division conductor, from 52 to 60 cents.

Enough has been said to prove that standardization of the rate per mile has not only not eliminated discrimination but has actually created new inequalities. The cases mentioned are sufficient to indicate their nature and seriousness.

We shall now consider briefly the effect which the arbitration proceedings and the extensive wage increases have had and may yet have on the relations between the railroad companies and the employees in train service.

With the beginning of the year 1910, railroad managers were confronted with the problem of raising freight rates as well as with the necessity of paying higher wages. If the situation had not been complicated by the freight rate question, it is probable that the railroads would have offered a more determined resistance to the demands of the employees and might have prevented some of the unreasonably high wage rates which are causing such a heavy increase in operating expenses. But when the negotiations reached a point where it plainly meant arbitration or strike, the railroads chose the more peaceful alternative. A strike, undoubtedly, would have added to the popular distrust of railroads and placed greater difficulties in the way of a satisfactory adjustment of the freight

rate situation. Possibly, too, the personnel of the arbitration boards may have suggested that if Federal instrumentality were responsible for materially increasing the cost of railroad operation by awarding higher wages, then Federal approval might not be withheld when the rate increases came up for review. The Baltimore & Ohio award was framed by Chairman Knapp of the Interstate Commerce Commission and Commissioner Neill of the Bureau of Labor; on the New York Central arbitration board, the senior member was Commissioner Clark of the Interstate Commerce Commission. It remains to be seen how much weight will be given by the Commission to the relation of railroad wages to freight rates but there is an impression in railroad circles that since the awards in the wage disputes have, in a sense, the stamp of governmental approval, it would be inconsistent on one hand to force upon the railroads a wage scale higher than they could afford to give voluntarily and on the other hand deny the railroads the one ready means of meeting the increased expense.

Confirming this impression, the committeemen representing the employees frequently expressed the opinion, while arbitration was in progress, that the increase in the pay roll expense would be more than made up by the greater revenue from the advanced freight rates. From the frequency and apparent sincerity of the statement, the conclusion is natural that it was inspired by the grand officers of the organizations. If this opinion is correct, then they too felt that there would be no hitch in the freight rate program. But the injunction restraining the western roads from increasing their rates, the subsequent agreement between President Taft and the railroads under which the tariffs were withdrawn, and the pas-

sage of the amended Interstate Commerce law, have made it impossible, as yet, for the railroads to recoup themselves in the manner intended. The disappointment of the railroads on account of the setback to the plan for advancing the rates has had the effect of aligning the railroads workers on the side of the companies in deprecating the policy of the administration and the Interstate Commerce Commission. As an illustration of the force of this sentiment, the organizations arranged a mass meeting in New York, September 24th, which was attended by upwards of 3000 railroad men, and in which resolutions were adopted pledging their

"collective and individual efforts against those who are selfishly and otherwise antagonistic to the interests from which we derive our livelihood" and "earnestly requesting the Interstate Commerce Commission to consider the proposed increases in the transportation rates of our employers in a broad-minded manner, and from the standpoint of their general knowledge of railway conditions as they exist; that technicalities and impractical theories should not be allowed to over-ride well known facts; and that such disposition may be made of the matter as will foster and encourage the efficiency of the service, the welfare of the rank and file and maintenance of standards best calculated to enhance the development of the properties."

The Interstate Commerce Commission, Congressmen, and Senators have been deluged with petitions from railroad employees praying that the railroads be given some relief from further regulation and restriction and allowed to advance their freight rates. The railroad brotherhoods, as such, rarely permit themselves to be drawn into any action which has a political aspect; but in the effort to induce the Interstate Commerce Commission to give favorable consideration to the freight rate increases, the brotherhoods and their individual members have been active allies of their employers. This alliance is justified by the organiza-

tion leaders on two grounds; first, because the prosperity of railroad workers depends primarily on the prosperity of the railroads and the further prosperity of the railroads demands a greater revenue per unit of service rendered; and, second, since generous wage increases were granted either by arbitration proceedings or voluntarily, and on the assumption that it would be possible to advance freight rates at once, the organizations, to show good faith, should do all in their power to influence the Interstate Commerce Commission to act favorably.

Looking at the situation from another viewpoint, the normal gap between the railroad management and their men has been widened by the results of recent arbitration. Heretofore, except in a few cases, the renewal of wage agreements has been a matter of adjustment between the managements and local committees representing the men, in which mutual concessions were common. The greater proportion of the settlements were effected without recourse on the part of employees to the grand officers of their brotherhoods. Only in rare cases has it been necessary to invoke the aid of outside influence or to submit the differences to arbitration. It is too much to hope that this policy of local adjustment will be the rule hereafter. The success of the standardization movement, engineered entirely by the national leaders of the organization, undoubtedly marks the passing of the local committee as a power in settling wage rates. It is reasonable to prophesy that nearly all future negotiations of this character will be conducted by the grand officers of the brotherhoods or their deputies. The outlook in this respect naturally is distasteful to the railroad official, who resents outside interference, and who conscientiously feels that the best

interests of the road and its men lie in handling such matters locally between the company and its men as employees, not as labor unions. On some of the eastern roads, it had never been necessary to call in a union official. But in the light of precedents established this year, and the success of the organizations, railroads managers are facing changed conditions which are forcing the personal element in the relations with employees to the background.

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NOTES AND MEMORANDA

THE DUN-GIBSON INDEX NUMBER

In the August issue of this JOURNAL, Professor J. Pease Norton called attention to "a revised index number for measuring the rise in prices" which Thomas Gibson has recently begun to publish in continuation of the suspended Dun Index. A critical examination of the merits of this new series may be serviceable to economists.

I

"For a great many years," as Professor Norton says, "the Dun index numbers had the approval of the business world." What is more surprising, they won the sanction of the Treasury Bureau of Statistics, and for some time were regularly re-published in its official documents, including the Statistical Abstract of the United States.

Whether they merited this popular approval and this official recognition is highly questionable. No one knows what value to set upon the Dun series, for the simple reason that the compiler never disclosed what data he used. Dun's Review stated regularly that 350 commodities were included, and that the price of each was "multiplied by the quantity annually consumed by each inhabitant, as nearly as may be ascertained by statistical records." But, for lack of space, the Review never printed the list of articles, never stated the sources from which quotations were taken, and never explained how "the quantity annually consumed by each inhabitant" was estimated. Hence the results had to be accepted on faith. Their vogue was due to "prestige value."

But no mystery veiled the distinguishing feature of the Dun series. Unlike most other index numbers, it was not

an average of relative prices, but a sum of actual prices in dollars and cents. It professed to show "the cost of a year's supplies of all the necessities of life" for a single person.¹ Dun's Review soberly explained that, "While these figures can not be considered exact, the approximation is sufficiently close to attain the desired result, and the ratio being constant the comparison with different dates shows to a cent the rise or fall in cost of living."²

This pretence of showing accurately changes in cost of living was a curious blunder; for the quotations used in constructing Dun's series were taken from wholesale markets. That changes in prices at wholesale differ materially from changes in prices at retail is well known. The best available evidence concerning the nature and degree of this difference is given by a table showing the average relative prices of the 25 foods for which the Bureau of Labor publishes both wholesale and retail quotations.³ According to this table, changes in wholesale prices usually indicate

TABLE I
RELATIVE PRICES OF 25 FOODS AT WHOLESALE AND RETAIL
Arithmetic Means. Average prices 1890-99 = 100

	At Wholesale	At Retail		At Wholesale	At Retail
1890	109	102	1899	96	99
1891	113	104	1900	101	101
1892	105	102	1901	104	105
1893	115	105	1902	113	110
1894	103	100	1903	107	110
1895	96	98	1904	106	110
1896	84	95	1905	107	111
1897	86	96	1906	113	114
1898	93	98	1907	117	119

¹ Hence the practice of multiplying the price of each article by the consumption per capita.

² Dun's Review, September 7, 1901. Quoted in Bulletin of the Department of Labor, March, 1902, p. 211. Italics mine. "The ratio being constant," probably refers to the system of weighting which is explained below.

³ The commodities included are: apples-evaporated; beans; beef-fresh; beef-salt; bread-wheat; butter; cheese; coffee; corn meal; eggs; fish-salt; flour-wheat; lard; milk; molasses; mutton; pork-bacon; pork-dry or pickled; pork-ham; pots-

the *direction* in which retail prices are moving. But they cannot be trusted even so far, since the fluctuations of 1902-04 present an exception to the rule. As an index of *degree of change* in cost of living, on the contrary, the wholesale figures are altogether untrustworthy. The average variation from one year to the next is more than twice as great for the wholesale series in the table as for the retail series — 5.9 points against 2.4. It follows that the Dun index number is not what it purports to be — an accurate measure of changes in cost of living.

Whatever merits the Dun series possesses, then, must be merits as an index of changes in wholesale prices. But if so much be granted, the advantages of Dun's system of weighting are open to question. The weights employed are food 50%, clothing 18%, and minerals and miscellaneous goods each 16%. Professor Norton regards this scheme of weights as worthy of continuation, because American families with incomes of less than \$700 have been found to make 47% of their expenditure upon food, 14% upon clothing, and 39% upon other things. No doubt, weights derived from family budgets are the best for use in tables of retail prices which show changes in cost of living. But it does not follow that proportions of family expenditure are the best gauge of the relative importance of commodities in wholesale trade. Indeed, there is a measure of absurdity in applying such weights to groups of commodities like pig iron, lime, fertilizers, lead, hides, and brick, which do not enter into family budgets.¹ Consumers' goods made from these materials might logically be weighed in this manner; but not the materials themselves.

toes; prunes; rice; sugar; tea; vinegar. To make the comparison as fair as possible, I have used the retail prices for the North Atlantic States when the wholesale market is New York, and for the North Central States when the wholesale market is Chicago.

The Bureau of Labor's comparison between the relative prices of 30 foods at retail and 54 foods at wholesale is less trustworthy than the present table. Nevertheless it yields substantially similar results. See Bulletin of the Bureau of Labor, July, 1908, pp. 195-7.

¹ These articles are among the few definitely known to be included in Dun's list. See Statistical Abstract of the United States, 1907, p. 569, note.

As the vogue of the Dun Index grew, the compiler became more ambitious and began to extend his figures backward, until finally he made an unbroken series for every year since 1860. Any one who has dealt with American price quotations must wonder enviously where this bold statistician found trustworthy records of prices and consumption for his 350 commodities over this long period of time. If he really had the data, he wronged all students of the subject by not publishing them, or at least indicating his sources. If, on the other hand, he was forced by scantiness of quotations to work with fewer commodities, or to make substitutions as he went further back, then he tacitly compromised the integrity of his series. Not until the substantial continuity of the quotations used has been guaranteed by a frank statement can confidence be felt in the comparability of the figures for different years and decades.

At best, then, Dun's index number shows the fluctuations in wholesale prices of an unknown and presumably changing list of commodities, weighted by *per capita* consumption, ascertained no one knows how. Whether it was worth while to attempt a continuation of this dubious series after Dun's Review dropped it is doubtful. For, however perfect the continuation, comparisons between the new figures and the old must always be attended by the uncertainty which clouds the title of the latter.

II

But is the Gibson Index really a continuation of the Dun series?

Two important changes have been made in the method of computation. First, the number of commodities included has been reduced from 350 to 50, and the latter list has been published. Second, the character of the series has been changed from a sum of wholesale prices of a year's supplies of necessities for one person in dollars and cents to an average of relative prices. These relative prices are taken ready-made from the Bureau of Labor and are based

upon average actual prices in the decade 1890-99. To graft these relative prices upon the Dun series, it was necessary to multiply them by 0.843. This figure represents the average of the Dun numbers for 1890-99, corresponding to an average of 1.000 for the same period in the series borrowed from the Bureau of Labor.¹

Aside from this multiplication by 0.843, Professor Norton's case for treating the new average of 50 relative prices as a continuation of the old sum of 350 actual prices rests upon the use of what he treats as identical weights. Dun's plan of multiplying the price of each commodity by its *per capita* consumption is given up, and the pretence that the results measure changes in cost of living is all but dropped. The continuity of weights consists simply in making the group of foods as a whole count for 50% of the total, and the groups of textiles, minerals, and miscellaneous articles count for 18%, 16%, and 16% respectively. To show that this method of manipulating relative prices drawn from the Bureau of Labor does actually produce results nearly identical with Dun's index number, Professor Norton compares the new Gibson and the old Dun figures for four dates, the year 1896, and the months January, February, and March, 1907 — and finds that the average differences do not exceed one point.

Such close agreement is surprising. For past experience in dealing with index numbers has established the belief that systems of weighting exercise less influence upon the results than the number and character of the series to which the weights are applied.² That a partial similarity of weights should have power to make an average of 50 relative prices come out as a rule within one point of a sum of 350 actual prices seems improbable. I have, therefore, computed the Gibson index number on the plan explained by

¹ Of course this short method of transposing relative prices to a new basis does not yield strictly accurate results. But to recompute the relative prices of 50 commodities on the basis, average actual prices in 1890-99 = 84.3, would have involved greater expense.

² Compare A. L. Bowley, *Elements of Statistics*, 2d edition, p. 224.

Professor Norton for all the years covered both by the Bureau of Labor data and by Dun's series. Table II presents the results.¹

TABLE II
COMPARISON BETWEEN THE GIBSON AND DUN INDEX NUMBERS
1890-1906

	Gibson	Dun	Difference
1890	96.0	91.6	+4.4
1891	96.9	96.1	+0.8
1892	89.1	90.0	-0.9
1893	89.2	90.6	-1.4
1894	79.4	83.3	-3.9
1895	78.8	81.5	-2.7
1896	72.3 ²	74.3	-2.0
1897	74.9	72.5	+2.4
1898	80.1	77.8	+2.3
1899	86.3	85.2	+1.1
1900	92.9	91.4	+1.5
1901	91.4	91.5	-0.1
1902	97.8	101.9	-4.1
1903	96.3	99.5	-3.2
1904	97.8	97.2	+0.6
1905	98.8	98.3	+0.5
1906	102.7	105.2	-2.5

In the 17 years covered by this table, Gibson's and Dun's index numbers disagree three times about the direction in which prices were trending. In 1896-97 the Gibson figures rise while the Dun figures fall; in 1900-01 the Gibson figures fall while the Dun figures rise; in 1903-04 the Gibson figures again rise while the Dun figures fall. The difference between the two series is less than one point in five years, between one and two points in three years, between two and three points in five years, between three and four points in two years, and over four points in two years. In eight

¹ To make sure that I was using the same series as Professor Norton, I checked my list by the relative prices for January, 1907, which he publishes. One discrepancy appeared. Professor Norton enters the relative price for "Wool, Ohio, fine fleece" as 125.1; the Bulletin gives 127.1. But Professor Norton's footing for textiles indicates that the discrepancy is merely a misprint.

² My result for this year differs by 0.1 from Professor's Norton's — 72.2.

years the Gibson figures exceed the Dun, in nine years the Dun figures exceed the Gibson. One series makes 1896, the other 1897 the year of lowest prices. The sum of the differences is 34.4 points, a trifle more than two points on the average, or twice the difference found by Professor Norton.¹

Lest it be thought that an average difference of little more than two points between two series of index numbers justifies a statistician in regarding one series as a continuation of the other, I may point out that the Gibson Index differs less from two series with which it is supposed to be unrelated than from the series which it is supposed to continue. Both of these series come from the Bureau of Labor. Since the Gibson figures were shifted from the Bureau's basis of average actual prices in 1890-99 to the Dun basis through multiplication by 0.843, they can be shifted back again through division by that same number. Then comparison is feasible. One of the series in the next table shows the Bureau's own figures for "all commodities" — about 250 in number. The other is made from the Bureau's relative prices by using only the averages of groups of closely related goods — like different kinds of cotton sheetings, shingles, window glass, etc.² This improvement reduces the number of series entering into the grand average from 250 to 145.

¹ A minor cause of difference which Professor Norton does not mention, is that the Dun figures which he uses refer to prices on July 1st of each year, whereas the Gibson figures which he publishes as a continuation for 1907-09 represent average prices for every month in the year. I have had to follow his example in using annual averages in the comparison with Dun, since the Bureau of Labor has not published monthly relative prices by single commodities for years before 1902.

² The groups for which I have used averages are as follows: cattle, hogs, sheep, beef, bread, crackers, bread-loaf, butter, fish, flour-wheat, meal-corn, pork, sugar, blankets, boots and shoes, carpets, cotton flannels, cotton yarns, drillings, ginghams, leather, overcoatings, sheetings, shirtings, silk, underwear, women's dress goods, worsted yarns, wool, coal-anthracite, coal-bituminous, petroleum-refined, bar iron, nails, pig iron, tools, builders' hardware, oak, pine-white, plate glass, shingles, window glass, earthen-ware, furniture, glassware, table cutlery, wooden ware, paper, tobacco.

The purpose is to get a simple arithmetic mean, which is the resultant of as many independent price-factors as possible. It might be desirable to go even further, and use but one average series each to represent all cotton and all woolen textiles. As the next table shows, the new figures are somewhat more sensitive than the old, but the differences are slight.

TABLE III
COMPARISON BETWEEN THE GIBSON AND THE BUREAU OF LABOR
INDEX NUMBERS

	Gibson + 0.843	Bureau of Labor		Differences	
		250 series	145 Series	250 series	145 series
1890	113.9	112.9	114.1	+1.0	-0.2
1891	114.9	111.7	112.7	+3.2	+2.2
1892	105.7	106.1	106.1	-0.4	-0.4
1893	105.8	105.6	105.0	+0.2	+0.8
1894	94.2	96.1	95.6	-1.9	-1.4
1895	93.5	93.6	92.8	-0.1	+0.7
1896	85.8	90.4	88.8	-4.6	-3.0
1897	88.8	89.7	88.7	-0.9	+0.1
1898	95.0	93.4	93.5	+1.6	+1.5
1899	102.4	101.7	102.5	+0.7	-0.1
1900	110.2	110.5	111.3	-0.3	-1.1
1901	108.4	108.5	109.6	-0.1	-1.2
1902	116.0	112.9	113.7	+3.1	+2.3
1903	114.2	113.6	113.8	+0.6	+0.4
1904	116.0	113.0	113.9	+3.0	+2.1
1905	117.2	115.9	115.8	+1.3	+1.4
1906	121.8	122.5	122.3	-0.7	-0.5

The differences shown by this table between the Gibson and Bureau of Labor figures are distinctly smaller than those shown by Table II between the Gibson and Dun figures. The sums of the differences are 23.7 points for the Bureau's own series, and 19.4 points for the revised series. The latter sum is not much more than half of the 34.4 points by which Gibson's Index differs from Dun's.¹

Comparison may be made also with Bradstreet's Index. This series is described as showing "the totals of the prices per pound of 96 articles," on the first day of each quarter from 1892 to 1898, and on the first day of each month from 1899 to date. The averages by years for 1892 to 1906, as computed by the compilers, are shown in the first column of the next table.² A process analogous to that applied

¹ Had the transposing been done by reducing the Bureau of Labor series to the lower level of the Gibson series, instead raising the latter to the higher level of the Bureau's series, the differences would have been smaller still.

² Bradstreets, Aug. 13, 1910, p. 526.

by Professor Norton in shifting the Bureau of Labor series to Dun's basis for 1890-99, may be applied in shifting the Bradstreet series approximately to Gibson's basis for 1892-99. The sum of the figures for 1892-99 is 650.1 in Gibson's Index, and 54.23 in Bradstreet's. The first sum divided by the second gives 11.987. The second column of the table shows Bradstreet's series multiplied by that number. The last two columns show how much both these revised Bradstreet and the Dun figures differ from the Gibson figures. It turns out once more that the new series agrees better with a supposedly unrelated index number than with that which it purports to continue.

TABLE IV

COMPARISON BETWEEN THE GIBSON AND THE BRADSTREET
INDEX NUMBERS

1892-1906

	Bradstreet's Index Number		Gibson's Index Number	Differences between Gibson's Index and	
	Original	Multiplied by 11.987		Bradstreet's × 11.987	Dun's
1892	7.78	93.3	89.1	-4.2	-0.9
1893	7.53	90.3	89.2	-1.1	-1.4
1894	6.68	80.1	79.4	-0.7	-3.9
1895	6.43	77.1	78.8	+1.7	-2.7
1896	5.91	70.8	72.3	+1.5	-2.0
1897	6.12	73.4	74.9	+1.5	+2.4
1898	6.57	78.8	80.1	+1.3	+2.3
1899	7.21	86.4	86.3	-0.1	+1.1
1900	7.88	94.5	92.9	-1.6	+1.5
1901	7.57	90.7	91.4	+0.7	-0.1
1902	7.88	94.5	97.8	+3.3	-4.1
1903	7.94	95.2	96.3	+1.1	-3.2
1904	7.92	94.9	97.8	+2.9	+0.6
1905	8.10	97.1	98.8	+1.7	+0.5
1906	8.42	100.9	102.7	+1.8	-2.5
Sums of the differences				25.2	29.2

As has been said, experience did not justify the man who planned Gibson's Index in thinking that a partial identity of weights would suffice to weld it smoothly to Dun's.

But his ill fortune passes expectation. Not knowing what commodities entered into the old series, he took long chances, and they have turned against him. Certainly no one could have foreseen that three other series taken at random, with widely varying lists of commodities and widely varying weights, would each happen to agree better than Dun's with the new series.

Gibson's Index, then, is not a legitimate heir of Dun's. But the fact that it comes fairly close to the latter and closer still to three other series, affords welcome evidence of the reliability of the common method of measuring changes in prices. Five index numbers, made from quotations for 350, 50, 250, 145, and 96 commodities respectively, all yield much the same results. Confidence in the representative character of each series is confirmed by the substantial agreement of the others.

III

The unsuccessful as a continuation of Dun's series, the Gibson Index deserves to be judged upon its own merits.

Its chief defect is obscurity of meaning. A technical description would run as follows: an arithmetic mean of the relative prices of 50 staple commodities at wholesale, computed on the basis of average actual prices in 1890-99, multiplied by 0.843, and classified in four groups, each weighted according to a scheme borrowed from Dun's index number, and justified by family expenditures at retail prices as shown by a collection of working-men's budgets. It is not easy to interpret such figures.

Clearly the Gibson Publishing Company would enhance the value of their index number by simplifying its character. If they dropped the vain pretence of continuing Dun's series, they would get rid both of the cumbrous method of computation and the obscurity of meaning which the effort at continuation involves. Then they might strike a simple arithmetic mean of relative prices which would be in-

telligible. This plan would make the 22 foods count as 44% of the 50 commodities, the 9 textiles and 9 minerals as 18% each, and the 10 miscellaneous goods as 20%. The results computed in this fashion run as follows.

TABLE V

THE IMPROVED GIBSON INDEX NUMBER, BY YEARS, 1890-1909
Arithmetic Means, Average Actual Prices, 1890-99 = 100

1890 . . .	114.0	1900 . . .	111.6
1891 . . .	113.9	1901 . . .	109.2
1892 . . .	105.1	1902 . . .	116.2
1893 . . .	105.2	1903 . . .	115.3
1894 . . .	93.9	1904 . . .	116.3
1895 . . .	93.9	1905 . . .	117.9
1896 . . .	86.6	1906 . . .	123.4
1897 . . .	89.2	1907 . . .	131.6
1898 . . .	95.0	1908 . . .	125.0
1899 . . .	103.4	1909 . . .	132.1

Such simplification is all that is needed to make the Gibson index number a model of its kind. For, as Professor Norton says, its composition "in the light of the statistical quality and importance of the articles, is excellent." But its chief advantage over rivals is the weekly publication which is promised. After such a weekly series had been maintained several years, it would afford a better basis than the monthly tables for investigating the relations between changes in prices of commodities at wholesale on the one hand, and changes in prices of stocks, rates of interest, activity of business, etc., on the other hand.

But useful as the Gibson Index might prove, neither it, nor any other single series can justly claim to be a satisfactory measure of the rise and fall of prices. For the kind of index number wanted must always depend upon the end in view. The very features which make a series admirable for one purpose may disqualify it for another. Already the purposes for which economists use index numbers are many, and doubtless they will multiply in the future. Hence the great value of the plan which Colonel Wright adopted

in the Bureau of Labor — that of recording the actual and relative prices of a long list of commodities, from which investigators may make such selections and combinations as their ends require.

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THE SOMERS SYSTEM OF REALTY VALUATION

THE quadrennial¹ revaluation of real estate for taxation, which has been in progress in Ohio during the present year, has revived the old problems relative to proper methods of taxation, and has given rise to new ones. The pressure of the present burden of taxation² has led to a general demand for reforms in the existing system of valuation, under which gross inequalities have entered into the assessment of real estate, both as between different localities and as between different parcels of real estate in the same locality.³ The popular demand everywhere has been for an enforcement of the constitutional and legal provisions requiring all property to be assessed at its fair cash value. Appraisal Boards throughout the state have been stimulated by this public outcry to greater efforts in the pursuit of their duties, and in the use of new methods of determining true valuations. One of the most elaborate of these methods is that which has been adopted in Cleveland, Ohio, the "Somers System of Realty Valuation."⁴ Its essential features will here be described briefly.

¹ Formerly decennial. Beginning with 1910, the appraisement is to be quadrennial. See Acts of the Ohio Legislature, Session of 1909, p. 81.

² The Cleveland tax rate in 1909 was \$3.37 per \$100.

³ See Report of the Ohio Tax Commission, 1908.

⁴ So-called from its inventor, Mr. W. A. Somers, of St. Paul, Minn. The system is the product of many years of experience in assessors' offices and of considerable study of the whole subject of real estate values. It has been used successfully in St. Paul and in Ramsey County, Minn., for both city and rural valuations, and has been installed in Columbus, Ohio, for the present appraisement of real estate. Parts of the system were used, under Mr. Somers' direction, by the New York Appraisal Board of 1906, but the fundamental features of the plan were not there employed.

The Somers system is based upon the principle that city real estate values are community values. Land is worth whatever the community thinks it is worth, barring the exceptional cases in which individuals may place unusual values upon particular sites for special purposes. One of the most prolific sources of inequality and disaffection in the assessment of real estate hitherto has been the failure to recognize this truth, and the persistent substitution of the shifting and arbitrary judgment of a Board of Assessors for the census of public opinion. The problem of proper valuation consists in approximating as closely as possible to the values which the community places upon its land.

In order to reach this approximation, units and factors must be used in the terms of which the community most generally thinks and deals, and by means of which it is most capable of forming correct judgments of values. To value individual city lots by this method is obviously out of the question, since it would be impossible to obtain a consensus of public opinion, sufficiently broad to be representative, regarding the value of each lot in the city. Individual lot values must be calculated, according to rules formulated by experience, from such units as to the value of which intelligent and representative public opinion does exist.

The best basis for the expression of "community opinion" regarding land values is thought to be the streets of the city, or more properly, a definite and uniform unit of land on each street. To quote Mr. Somers — "There always exists in cities a Community Opinion that a certain street is the best for business, and a consequent idea that land fronting thereon is the most valuable. From this most valuable street other streets of less value will be compared, a well-defined opinion being present that the property on the less valuable street is less valuable just in proportion as the street is less valuable, and the comparison will reach out from the centre or best portion and embrace the entire city. . . .

"To make use of this Community Opinion of the relative

worth of the streets, it is necessary to find some common term that can be used to express their comparative value as a unit in all parts of the city. The value of one foot in width for some fixed depth is the best measure for the purpose, because of its common use and its applicability both to gauge comparative value of streets and real value of tracts."¹

The Somers unit is a strip of land one foot wide and one hundred feet deep, free from corner influence, *i. e.* uninfluenced by the higher values due to the proximity to a corner. Once the community has agreed upon the value of this unit for each street, the valuation of individual lots becomes simply a matter of the application, by a clerical force, of certain fixed rules of experience which have been developed by the inventor.

The valuation of the units is arrived at in the following manner. The City Appraisal Board of Cleveland estimates tentatively the unit values of the various streets, beginning at the Public Square and working out in every direction to the corporation limits.² By means of maps and a campaign of publicity in the city newspapers, these tentative valuations are scattered broadcast, and the community is invited to discuss them. At a series of public meetings of the Board, section after section of the city is covered, many parts being gone over several times, until all interested persons are given ample opportunity to appear before the Board and submit evidence in favor of changing the tentative unit values. After being thoroly debated by the public in this manner, the unit values finally agreed to by the majority are regarded as representing the consensus of opinion. These unit values are confirmed by the Board, and are not open to further discussion.

¹ The Valuation of Real Estate for the Purpose of Taxation, by W. A. Somers, St. Paul, Minn, 1901, p. 19.

² The Board adopted the rule that property should be valued on the basis of the best use of it, *i. e.* a lot in the business section which was being used for residence purposes should be valued as business property. The owner, and not the public, should bear the loss if the property were put to any other than its best use. Another rule followed was that thoroughfares, which were defined as the main channels of trade and travel, should be valued uniformly higher than the minor streets.

With these unit values agreed upon, the next step is the valuation of individual lots. Numerous devices and rules of experience have been prepared by the inventor to facilitate this work, which is done by clerks who never see the lots they are valuing. The most important of these aids are the following.

(1) The curve of values: a scale showing the percentage of the unit value for a one-foot strip of any depth. It is made necessary by the fact that lots are of varying depths. The following selected figures show how the percentage of the unit value is used for lots from 1 foot to 700 feet deep.

TABLE I

CURVE OF VALUE¹

(Arranged and Printed for the City of Cleveland)

Depth of Lot	Percent of unit value	Depth of Lot	Percent of unit value
1	3.10	80	90.90
10	25.00	90	95.60
20	41.00	100	100.00
30	54.00	150	115.00
40	64.00	200	122.00
50	72.50	250	126.05
60	79.50	500	137.85
70	85.60	700	142.35

(2) Another problem calling for the application of special devices is the valuation of corner lots,² deriving their advantages from the fact of frontage on two streets, and more valuable than ordinary lots of the same size. The amount by which the corner lot is more valuable depends on the unit values of the intersecting streets. The minimum excess over an ordinary lot will occur if one street is a *cul de sac* giving access simply to light and air and allowing

¹ In the full table as officially printed a percentage is given for each foot of depth from 1 to 700. The figures here reproduced suffice to indicate the nature of the progression.

Corner influence is not calculated in Cleveland if the combined unit values do not exceed \$100. This excludes much of the residence territory.

display windows, but with no assigned unit value. The maximum excess of value over an inside lot of equal size will be created by units of equal value on the intersecting streets. The influence of the corner is assumed to extend 100 feet in each direction from the corner, and the relative excess must be spread equitably over this area of 100 by 100 feet. For the purpose of doing this, the zone of corner influence is divided into 100 squares, each 10 by 10 feet. These squares are numbered, always in the same manner with reference to the better street, and the value of each square has been calculated for a series of combinations of intersecting unit values, by assuming the unit value on one street as constant at \$1,000, and varying the other unit value, by \$10 intervals, from \$10 to \$1,000. Unit values above \$1,000 are always regarded as multiples of \$1,000; thus, unit values of \$9,000 and \$4,500 are reduced to \$1,000 and \$500, etc.

In the actual process of valuing individual lots the clerks are provided with printed slips bearing the numbered squares, and a set of the tables giving the values of the squares under all the above conditions of varying unit values.¹ A lot of any size is easily valued by marking off on a slip the squares which lie within it, and adding the values of these squares. The following table reproduces the squares as they are numbered, and also includes the value in dollars of each square when the unit values on the intersecting streets are \$1,000 and \$250 respectively.

¹ Instead of the printed slips, transparent scales having the squares laid off as on the slips, are often used. By laying one of these scales over a blue print of the block, the squares included within each lot can be written down at once.

TABLE II

10	20	30	40	50	60	70	80	90	100
\$609	\$715	\$824	\$938	\$1050	\$1168	\$1295	\$1433	\$1584	\$1740
9	19	29	39	49	59	69	79	89	99
954	773	679	619	572	538	514	493	476	470
8	18	28	38	48	58	68	78	88	98
1037	849	756	691	641	597	571	548	528	531
7	17	27	37	47	57	67	77	87	97
1127	933	835	761	719	683	644	624	614	612
6	16	26	36	46	56	66	76	86	96
1240	1032	918	875	809	748	734	714	704	702
5	15	25	35	45	55	65	75	85	95
1433	1137	1020	965	904	893	872	854	852	852
4	14	24	34	44	54	64	74	84	94
1618	1303	1167	1110	1033	1066	1044	1018	1008	1001
3	13	23	33	43	53	63	73	83	93
1840	1538	1403	1370	1353	1345	1334	1318	1306	1302
2	12	22	32	42	52	62	72	82	92
2125	1838	1757	1701	1671	1664	1647	1625	1612	1604
1	11	21	31	41	51	61	71	81	91
2803	2693	2645	2619	2594	2579	2563	2536	2517	2506

Street Unit Value \$320.

Corner Street Unit Value \$1000.

The heavy lines drawn on the lower left side of this diagram represent, for example, an irregular lot, with 93 feet on the better street, 40 feet on the side street and a minimum depth of 60 feet from the side street. The clerks are provided with blue prints of each city block, on which are given contours of every lot, regular or irregular. The fractional parts of the square are estimated by the clerk, who checks up his estimates by totalling the lots and parts of lots which fall within the large square, and comparing this total with the value of the latter, taken as a whole. The two totals must be the same. A lot situated to the right of the one outlined, and extending outside the area of corner influence, would be valued by using the curve of value for that part which lies outside the zone of corner influence and the corner squares for that part which is included within it.

In this case, the use of the curve of value (as illustrated in Table I) would indicate that the squares in the eleventh tier, counting back from the better street, were worth \$400 each, those in the twelfth tier \$350 each, etc. But from the side street, the squares in the tenth tier would be worth only \$220 each, those in the ninth tier \$235 each, etc. In every case in which the value of a square would be greater from the better street than from the side street, enough must be added to the lesser valuation to make it equal to the greater. The total value of lot B is then found as follows:—

50 feet frontage, at \$500 per foot	\$25,000
Total overlap (sum of excess in all of the squares affected)	1,225
Total value of Lot B	<u>\$26,225</u>

Similarly, if a lot were being valued from the better street, the \$200 square would be subject to an overlap of \$20, due to the greater influence at that point, of the unit value on the side street.

(4) The land occupied by an alley is valued at the same figure as the lots fronting on the streets to which the alley gives egress. The total value of the strip occupied by the alley is spread over the lots which abut on the alley, in proportion to the alley frontage of each. The argument for this is that the abutting lots have the advantage of light and accessibility given by the passageway and should properly be assessed with the value of the land so used.

(5) Buildings are valued separately, as is required by the Ohio law. The first step in this process is to take a census of all the buildings of every kind in the city. Forms have been prepared upon which a description of a building can be quickly entered by checking off the proper items in a long list, which covers such points as the kind of materials, the finish and equipment, dimensions, age, condition, rental, and the like. The forms are of four general types, appropriate for the description of the following classes of buildings:—

1. Single house; one side of double house; one of row; duplex.
2. Flats for families; tenements; apartments.
3. Warehouse; factory; mill; foundry; garage; stable; shed.
4. Store building; office; hotel; theatre; bank; church; hall.

This grouping is elastic enough to include buildings not specifically mentioned. The total number of buildings counted and valued was 96,431.

The basis of building valuation is the square foot of superficial area. A schedule of values per square foot has been arranged for each of the four general types of structure above mentioned. In each schedule the gradations of height, of materials, of style and quality of construction, of finishing and plumbing, are taken account of, by a rising scale of values per square foot. An inspection of the field report on each building enables the appraiser to classify the structure properly, and to determine from the schedule the valuation per square foot.

This square foot valuation is subject to deductions according to the age and condition of the building. A scale of depreciation has been prepared to meet the building conditions in Cleveland.¹ The scale gives weight to the following factors: materials, whether wood or brick; condition of repair, whether good, fair, or bad. The deduction from the valuation per square foot on account of depreciation is tabulated for each year of age up to about sixty-five or seventy years, and for each of the above factors; also for each possible valuation per square foot by 10 cent intervals between \$1.00 and \$10.00 per square foot. The product of the present valuation per square foot and the superficial area of the house gives the present value of the structure. The results of this method have been very successfully checked by obtaining the estimates of real estate agents

¹ It was found that a scale of depreciation suitable for St. Paul, Minn. where most buildings are of recent construction, would not serve for Cleveland, where many old buildings are still in use and in good condition.

as to the value of the buildings on a certain street, and then determining their values independently by the rules as described. The two sets of valuations coincided so closely that the Board was much encouraged in the use of this method.

The real property of the railroads, which has hitherto been valued at much less than its true value, was assessed by the use of the unit system in the same way as other property. The unit value used was that given to the property adjoining the railroad real estate. In addition, for the purpose of determining the total valuation of the right of way, the railroads were weighted according to the density of traffic and the general importance of the particular road.

Vacant tracts in the outlying parts of the city were given a unit value per acre, which was again determined by community opinion.

Tho this scheme probably has some imperfections, it is undoubtedly the most scientific, elaborate, and systematic system of valuing real estate that has ever been used in the United States. There could be little objection to its theoretical basis, community opinion. Some doubt may exist as to the accuracy with which community opinion has been translated into actual values by the various tables and other devices of the present system. These must faithfully represent the best informed community opinion. Later and more extended researches may reveal necessary refinements and corrections of the calculations used at present. Until such improvements have been made, however, it will not be unprofitable to use the results thus far obtained for the valuation of real estate.

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BOOKS RECEIVED

- Baring, F. H. *Domesday Tables for the Counties of Surrey, Berkshire, Middlesex, Hertford, Buckingham and Bedford and for the New Forest.* London: St. Catherine Press. 1909. pp. 239. 7s. 6d.
- Besse, P. *La Crise et L'Évolution de L'Agriculture en Angleterre de 1875 à nos Jours.* Paris: F. Alcan. 1910. pp. 390. 10 fr. Essai d'Histoire Économique.
- Brace, H. H. *Gold Production and Future Prices.* New York: Bankers Publishing Co. 1910. \$1.45. (An Inquiry into the Increased Production of Gold and Other Causes of Price Changes with a View to Determining the Future of Prices.)
- Casson, T. N. *The History of the Telephone.* Chicago: A. C. McClurg Co. 1910. pp. 315. \$1.50.
- Clark, J. M. *Standards of Reasonableness in Local Freight Discriminations.* New York: Columbia University. 1910. pp. 155. \$.125. (Columbia University Studies, Vol. XXXVII, No. 1.)
- Coats, R. H. *Wholesale Prices in Canada, 1890-1909. Special Report.* Dominion of Canada—Department of Labour. Ottawa: Government Printing Bureau. 1910. pp. 509. 50 cents.
- Coker, F. W. *Organismic Theories of the State.* New York: Columbia University. Nineteenth Century Interpretations of the State as Organism or as Person. 1910. pp. 209. \$1.50. (Columbia University Studies, Vol. XXXVIII, No. 2.)
- Coman, Katherine. *The Industrial History of the United States.* New York: Macmillan. 1910. pp. 461. (New and Revised Edition.)
- Cox-Sinclair, E. S. and Hynes, T. *Land Values. The Taxation of Land Values under the Finance (1909-10) Act, 1910.* London: Charles Knight & Co. 1910. pp. 418. 10s.
- Davis, W. S. *The Influence of Wealth in Imperial Rome.* New York: Macmillan. 1910. pp. 340. \$2.00.
- Eaves, Lucile. *A History of California Labor Legislation.* Berkeley: University of California. 1910. \$4.00. (With an introductory sketch of the San Francisco Labor Movement.)
- Field, A. S. *The Child Labor Policy of New Jersey.* Cambridge: American Economic Association. 1910. pp. 229. \$1.25.
- Frankel, L. K. and Dawson, M. M. *Workingmen's Insurance in Europe.* New York: Charities Publication Committee. 1910. pp. 477. \$2.50. (Russell Sage Foundation.)
- Gillette, K. C. *World Corporation.* Boston: New England News Co. 1910. pp. 240.
- Guyot, Y. *Socialistic Fallacies.* New York: Macmillan. 1910. pp. 343. \$1.50.
- Hilkey, C. G. *Legal Development in Colonial Massachusetts 1630-1686.* New York: Columbia University. 1910. pp. 148. \$1.25. Columbia University Studies, Vol. XXXVII, No. 2.)
- Hill, R. T. *The Public Domain and Democracy.* New York: Columbia University. A Study of Social Economic and Political Problems in the United States in Relation to Western Development. 1910. pp. 240. \$2.00. (Columbia University Studies, Vol. XXXVIII, No. 1.)

- Howard, E. D. and Johnson, J. F. *Money and Banking*. New York: Alexander Hamilton Institute. 1910. pp. 495. (A discussion of money and credit, with descriptions of the world's leading banking systems. *Modern Business*, Vol. V.)
- Jefferson, H. McN. and Escher, F. *Banking Practice and Foreign Exchange*. New York: Alexander Hamilton Institute. 1910. pp. 407. (*Modern Business*, Vol. VI.)
- Johnston, H. H. *The Negro in the New World*. New York: Macmillan. 1910. pp. 499. \$6.00.
- Lescohier, D. D. *The Knights of St. Crispin 1867-1874. A Study in the Industrial Causes of Trade Unionism*. Madison: University of Wisconsin. 1910. pp. 101. 40 cents.
- Lingley, C. R. *The Transition in Virginia from Colony to Commonwealth*. New York: Columbia University. 1910. pp. 218. (*Columbia University Studies*, Vol. XXXVI, No. 2.)
- Loubet, E. et Autres. *La Politique budgétaire en Europe*. Paris: F. Alcan. 1910. pp. 316. 3 fr. 50. (*Les Tendances actuelles*. Allemagne, France, Grande-Bretagne, Empire Ottoman, Russie.)
- McPherson, L. G. *Transportation in Europe*. New York: Henry Holt. 1910. pp. 285. \$1.50.
- Murray, W. S. *The Making of the Balkan States*. New York: Columbia University. 1910. pp. 199. \$1.50. (*Columbia University Studies*, Vol. XXXIX, No. 1.)
- New York State Education Department. *Review of Legislation 1907-8. Legislation 39*. Albany: University of the State of New York. 1910. pp. 475.
- Nogaro, B. and Moye, M. *Les Régimes Douaniers (Législation douanière et Traités de Commerce)*. Paris: A. Colin. 1910. pp. 320. 3 fr. 50.
- Ostrogorski, M. *Democracy and the Party System in the United States*. New York: Macmillan. 1910. pp. 469. \$1.75. (A study in extra-constitutional government.)
- Rasch, A. *Das Eibenstocker Stickereigewerbe unter der Einwirkung der Mode*. Tübingen: H. Laupp. 1910. pp. 166. M. 4.
- Rignano, E. *Le Socialisme*. Bologna: N. Zanichelli. 1910. pp. 27. (*Estratto da "Scientia" Rivista di Scienza*, Vol. VIII, Anno IV, No. XVI-4.)
- Snowden, J. H. *The World a Spiritual System*. New York: Macmillan. 1910. pp. 316. \$1.50. (An outline of metaphysics.)
- Spedden, E. R. *The Trade Union Label*. Baltimore: Johns Hopkins Press. 1910. pp. 100. (*John Hopkins University Studies*, Series XXVIII, No. 2.)
- Supino, C. *Il Mercato Monetario Internazionale*. Milano: Ulrico Hoepli. 1910. pp. 363. 6l.
- Swanson, W. W. *The Establishment of the National Banking System*. Kingston: The Jackson Press. 1910. pp. 117.
- Taussig, F. W. *The Tariff History of the United States*. New York: Putnam's. 1910. \$1.50. (Fifth Edition, Revised.)
- Unsigned. *The Minority Report. A Criticism*. London: P. S. King. 1910. pp. 32. 6d. (A Summary which appeared in the "Times" of 19th June, 1910.)
- Vouters, H. *Le Petit Commerce contre les Grands Magasins et les Coopératives de Consommation*. Paris: A. Rousseau. 1910. pp. 205.
- Wilcox, D. F. *Great Cities in America. Their Problems and their Government*. New York: Macmillan. 1910. pp. 426. \$1.25.

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OFFICE DE LA REVUE: 4, RUE DU PARLEMENT, BRUXELLES